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# The Journal



OF THE

## Board of Agriculture.



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VOLUME III.

(JUNE 1896 TO MARCH 1897.)

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# INDEX TO VOL. III.

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## ERRATUM.

Page 223, Heading of first table, for *Prices* read *Places*.

	Page
Aberdeen, live stock at markets, prices and numbers weighed	91, 222, 330, 440
Adulteration :	
Food products: Report of Committee -	201
Milk and butter -	304
Germany, margarine legislation -	255
United States, measures in Washington State -	190
Advances on grain in Russia -	318
Africa, German East, wheat cultivation -	308
Agricultural :—	
Colonies in Spain -	181
Returns :	
Great Britain, acreage and produce, 1895 -	77
" " acreage and live stock, 1896 -	135
" " produce returns, 1896 -	355
Ireland, area and production, 1895 -	85
" area and live stock, 1896 -	323
" migration of labourers, 1896 -	325
" produce returns, 1896 -	420
Agriculture :—	
Board of. See <i>Board of Agriculture</i> .	
Royal Commission on, 2nd Report -	88
" " Rateable value of lands -	426
In Algeria -	69
" France -	411
" Normandy -	66
" Western -	64
" Germany -	251
" Norway -	317
" Palestine -	71
" Poland -	66
" Roumania -	312
" Russian Turkestan -	54
" Spain -	320
" Switzerland -	73
Alcohol bounty in Germany -	253
Algeria, agriculture -	69
American Blight, or Woolly Aphis -	276
Analyses of fertilisers and feeding stuffs -	376
" milk and butter -	304
Animals, see <i>Live Stock</i> .	
Diseases of, see <i>Diseases</i> .	
Anthrax Returns :—	
Great Britain -	109, 240, 348, 460
Ireland -	110, 207, 241, 349, 461
Antwerp linseed trade -	320
Aphides -	273, 363
Aphis, Woolly ( <i>Schizoneura lanigera</i> ) -	276
Apples :—	
Crop, 1896 -	366
Imports -	90, 218, 329, 367, 436
Prices -	107, 238, 346, 367, 458
and Woolly Aphis -	276
Germany, cider industry -	193

Argentina:—	Page
Cereal cultivation	142, 416
Crops	25
Live stock	396
Army worm ( <i>Leucania unipuncta</i> )	269, 275
Artichokes, prices	456
Ashford, live stock at market and numbers weighed	91, 222, 330, 440
Asses:—	
In Algeria	70
„ Switzerland, 1886	74
„ „ 1896	173
Assessments of farmers to local rates	379
Australia:—	
Export regulations, proposed	174
Tick fever conference	297
Wool, exports to United Kingdom	247
New South Wales:	
Dairying	167
Wheat growing	170
Queensland:	
Dairy produce	307
Inspection of animals and meat	61
Wheat growing and trade	50
South Australia, shipment of frozen produce	295
Victoria:	
Crops	32, 389
Dairy and bacon factories	52
Exports of perishable produce, 1895-6	175
Fruit growing	48
Austria:—	
Crops	25, 147, 269, 387
Egg trade	369
Importation of animals, regulations	63
Registration of land	423
Bacon:—	
Imports	90, 211, 329, 430
„ values per cwt.	99, 230, 338, 450
India, imports (including hams)	19
Victoria, factories	52
Banks:—	
Agricultural, in Belgium	45
„ „ Germany	1
Barley:—	
Area, 1896	135
„ Ireland, 1896	324
Exhibition of 1896	393
Imports	90, 115, 216, 329, 433
Prices and quantities sold	100, 231, 339, 451
„ of imported barley	119
„ and production	78
Production, 1896	356
„ and area in Ireland, 1895	85
„ „ „ 1896	421
Soil, its effect on barley	394
Substitutes and excise duty on beer	305
Supply of United Kingdom	115
Austria, area and production, 1896	387
Belgium:	
Prices	102, 233, 341, 453
Production, 1896	270
Canada:	
Manitoba, area, 1896	151, 388
„ production, 1896	263, 388
Ontario, production and area, 1896	268
Denmark: Production, 1895	26, 148



Barley— <i>cont.</i>	Page
France:	
Area and production, 1896 - - - - -	267
Prices - - - - -	102, 233, 341, 453
Germany:	
Prices (Berlin) - - - - -	103, 234, 252, 342, 454
Production, 1896 - - - - -	271
Hungary, area and production, 1896 - - - - -	150
Italy, production, 1896 - - - - -	267
New Zealand, area, 1895-6 - - - - -	185
Roumania, area and production, 1896 - - - - -	267
Russia, production, 1896 - - - - -	272
Sweden, production, 1896 - - - - -	388
United States:	
Area, 1896 - - - - -	145, 266, 384
Production, 1896 - - - - -	266, 384
Bavaria, farm indebtedness - - - - -	186
Bean aphid ( <i>Aphis rumicis</i> ) - - - - -	273
„ beetle ( <i>Bruchus rufimanus</i> ) - - - - -	33
Beans:—	
Fodder in Canada - - - - -	170
Imports - - - - -	216, 433
Prices - - - - -	105, 236, 344, 456
New Zealand, area, 1896 - - - - -	185
Beans and peas, area in Ireland, 1896 - - - - -	324
„ „ Sweden, production, 1896 - - - - -	388
Beef:—	
Imports - - - - -	90, 210, 329, 429
„ value per cwt. - - - - -	99, 230, 338, 450
Prices - - - - -	79, 96, 227, 335, 447
United States cattle industry - - - - -	257
Beer, barley substitutes and the excise duty - - - - -	305
Bees:—	
Foul brood or bee-pest - - - - -	132
Switzerland, number of hives, 1886 - - - - -	74
„ „ „ 1896 - - - - -	173
Beetroot:—	
Prices - - - - -	106, 237, 345, 457
Production in Ireland - - - - -	85
Denmark, crop, 1895 - - - - -	148
Russia, production, 1896 - - - - -	272
Beet-sugar industry on the Continent - - - - -	14
Belgium:—	
Banks, agricultural - - - - -	45
Beet sugar industry - - - - -	15
Corn prices - - - - -	102, 233, 341, 453
Crops - - - - -	270
Egg trade - - - - -	369
Honey, regulations for the sale of - - - - -	62
Linseed trade of Antwerp - - - - -	320
Sugar, regulations for the sale of - - - - -	309
Bere, area and production in Ireland, 1896 - - - - -	421
Berlin:—	
Prices of cattle and sheep - - - - -	98, 229, 337, 449
„ corn - - - - -	103, 234, 342, 454
Berne (canton), number of live stock, 1886 - - - - -	74
Birmingham, live stock at markets and numbers weighed - - - - -	91, 222, 330, 440
Bisulphide of carbon - - - - -	36, 282
Blackberry cultivation in America - - - - -	58
Black-rot of tomatoes ( <i>Macrosporium tomato</i> ) - - - - -	154
Board of Agriculture:—	
Agricultural returns, area and production, 1895 - - - - -	77
„ „ area and live stock, 1896 - - - - -	135
„ „ produce, 1896 - - - - -	355
Diseases of Animals, Report, 1895 - - - - -	321
Dogs, Report of Committee - - - - -	419
Education (Agricultural), distribution of grants, 1895-6 - - - - -	195
Hop acreage - - - - -	187
Lucerne cultivation - - - - -	299

Board of Agriculture— <i>cont.</i>	Page
Mustard cultivation - - - - -	301
Ordinance Survey, Departmental Committee Report - - - - -	197
Pleuro-pneumonia and Canadian cattle - - - - -	82
Swine-fever, Departmental Committee Report - - - - -	79
Tithe Acts, proceedings under - - - - -	82
Board of Trade :—	
Changes in wages and hours of labour, 1894 - - - - -	199
Hirings in Scotland, 1896 - - - - -	393
Bones, imports - - - - -	221, 438
Borough and Spitalfields Markets prices :—	
Fruit - - - - -	107, 238
Vegetables - - - - -	106, 237
Bosnia, plum culture - - - - -	173
<i>Botrytis</i> :—	
In lilies - - - - -	283
„ potatoes - - - - -	124
„ snowdrops - - - - -	284
„ turnips and swedes - - - - -	120
Bouillie Bordelaise - - - - -	71, 157, 284
Bounties :—	
On alcohol in Germany - - - - -	253
„ sugar in Belgium and Holland - - - - -	14
„ „ Germany - - - - -	254
Branding sheep with tar - - - - -	44
Bread, reports on the price of, on the continent - - - - -	208
Brewers' Exhibition of 1896 - - - - -	393
Bristles, imports - - - - -	439
Bristol, live stock at markets and numbers weighed - - - - -	91, 222, 330, 440
Broccoli prices - - - - -	105, 457
Brome grass, smut of - - - - -	289
Buckwheat :—	
Denmark crop, 1895 - - - - -	148
United States area and production, 1896 - - - - -	384
Butter :—	
Adulteration, Food Products Committee Report - - - - -	201
„ Local Government Board Report, 1895-6 - - - - -	304
Imports - - - - -	90, 212, 329, 431
“Ladled,” in America - - - - -	402
Making in Derbyshire - - - - -	60
Prices - - - - -	104, 235, 343, 455
„ in Ireland, 1881 and 1895 - - - - -	87
Australia:	
New South Wales, butter making - - - - -	167
Queensland, production - - - - -	307
Victoria, exports - - - - -	176
„ factories - - - - -	52
Canada, dairying - - - - -	169
Denmark trade - - - - -	188
Finland trade - - - - -	306
Holland, exports to Great Britain - - - - -	68
Sweden and Norway trade - - - - -	7
Switzerland, butter making - - - - -	74
Washington State, production - - - - -	190
Cabbage butterflies ( <i>Pieris</i> ) - - - - -	274
Cabbages :—	
Area in Ireland, 1896 - - - - -	324
Prices - - - - -	106, 237, 344, 456
California : Emigration to - - - - -	319
Camels in Algeria - - - - -	70
Canada :—	
Cattle and pleuro-pneumonia - - - - -	82
Cold storage for fruit - - - - -	302
Crofter colonisation - - - - -	326
Crops in Manitoba - - - - -	151, 268
„ and live stock in Manitoba - - - - -	388



Canada— <i>cont.</i>	Page
Crops and live stock in Ontario	268
Dairying	169
Eggs, exports	374
Oats, cultivation	301
Canals (irrigation) in India	177
Cane-rust of raspberries ( <i>Glascosporium venetum</i> )	58
Carbolic acid	134
Carrot fly ( <i>Psila rosae</i> )	390
Carrots :—	
Prices	105, 236, 344, 456
New Zealand, area	186
Caterpillars. See <i>Insects</i> .	
Cattle :—	
Diseases, quarterly returns	108, 239, 347, 459
Exports	210, 429
Imports	90, 209, 329, 428
„ from Ireland to Great Britain	89, 221, 328, 439
Number in Great Britain, 1896	135
Pleuro-pneumonia and Canadian cattle	82
Prices	97, 228, 336, 448
„ and numbers weighed at markets	91, 222, 330, 440
Tuberculosis, Royal Commission, Report	88
Algeria, number	70
Argentina, number, 1895	396
Australia, Tick-fever conference	297
New South Wales, dairy cows	167
Canada :	
Manitoba, number, 1896	388
Ontario, number	269
Finland	306
France, imported cattle and the tuberculin test	44
France (Paris), prices	98, 229, 337, 449
Russia, cattle raising	10
Switzerland, number, 1887	74
„ „ 1896	173
United States, cattle raising	257
„ „ number in 1897	405
„ „ Chicago, prices	99, 230, 338, 450
„ „ Dakota and Nebraska, number of milch cows	401
Uruguay, trade	172
Venezuela, cattle raising	189
Cauliflowers, prices	344, 456
Celery, prices	106, 344, 456
Cereals. See <i>Corn</i> .	
Cheese :—	
Imports	90, 213, 329, 432
Making in Derbyshire	60
Prices	104, 235, 343, 455
Australia :	
New South Wales, cheese-making	167
Queensland, production	307
Victoria, exports	176
„ factories	52
Canada, industry	169
India, imports	19
Switzerland, industry	74
United States : Dakota and Nebraska production	400
Washington State, production	190
Cherries :—	
Crop of 1896	365
Imports	218, 366, 436
Prices	238, 366
Cherry moth ( <i>Argyresthia nitidella</i> )	153
Chicago, prices of cattle	99, 230, 338, 450
Chilled brood of bees	133
Chilled produce. See <i>Refrigerated produce</i> .	
Cider industry in Germany	193

	Page
Clover and rotation grasses :—	
Area, 1896 - - - - -	135
„ Ireland, 1895 - - - - -	85
„ „ 1896 - - - - -	324, 421
Production, 1896 - - - - -	359
„ Ireland, 1896 - - - - -	421
Seeds, imports - - - - -	218, 437
Cob nuts, prices - - - - -	107, 346, 368, 458
Cockchafer ( <i>Melolontha vulgaris</i> ) - - - - -	38
Codlin moth ( <i>Carpocapsa pomonella</i> ) in walnuts - - - - -	160
Coffee exported from India - - - - -	20, 207
Colleges, Agricultural instruction at - - - - -	195
Colonies (Agricultural):—	
In Prussia - - - - -	5
„ Spain - - - - -	181
Colonisation (crofters) in Canada - - - - -	326
Commissions (Royal):—	
On Agriculture, 2nd Report - - - - -	88
„ Rateable value of lands, 1870-94 - - - - -	426
„ Land in Wales and Monmouth - - - - -	321
„ Tuberculosis - - - - -	88
Committees :—	
On dogs - - - - -	419
„ food products adulteration - - - - -	201
„ ordnance survey maps - - - - -	197
„ swine fever - - - - -	79
„ traction engines on roads - - - - -	203
Commons, inclosure of - - - - -	82
Condensed milk :—	
Imports - - - - -	90, 212, 329, 431
Switzerland, exports - - - - -	74
Co-operative :—	
Agricultural societies in Belgium - - - - -	45
„ „ Germany - - - - -	1
Dairying in Germany - - - - -	4
„ Sweden and Norway - - - - -	8
„ Switzerland - - - - -	74
Fruit selling in New Zealand - - - - -	407
Pig-slaughtering in Denmark - - - - -	188
Poultry farming in Denmark - - - - -	373
Copyhold Acts, proceedings under - - - - -	82
Corn (see also <i>Wheat, Barley, Oats, &amp;c.</i> ):—	
Area, 1896 - - - - -	135
„ Ireland, 1896 - - - - -	324
Imports - - - - -	90, 216, 329, 433
Moth ( <i>Sitotroga cerealella</i> ) - - - - -	280
Prices and production in Great Britain - - - - -	78
„ and quantities sold - - - - -	100, 231, 339, 451
Production, 1896 - - - - -	355
„ Ireland, 1895 - - - - -	85
„ „ 1896 - - - - -	421
Report on the prices of, on the continent - - - - -	208
Argentina, cereal cultivation - - - - -	142
Belgium, prices - - - - -	102, 233, 341, 453
Denmark trade - - - - -	188
France, importation for starch-making - - - - -	53
„ prices - - - - -	102, 233, 341, 453
Germany :—	
Grain depôts - - - - -	53
Prices (Berlin) - - - - -	103, 234, 342, 454
„ (Prussia) - - - - -	252
India, exports - - - - -	20
Russia, Finland, kiln drying of corn - - - - -	406
Uruguay, cultivation - - - - -	398
Cotton :—	
India, exports - - - - -	20, 24, 207
Turkestan, production - - - - -	54
United States acreage - - - - -	145



	Page
County Councils and agricultural education	196
Finances, England and Wales, 1894-5	425
"    Scotland, 1893-4	424
Covent Garden Market prices :—	
Vegetables	105, 236, 344, 456
Fruit	107, 238, 346, 458
Creameries :	
In Canada	169
"    Derbyshire	60
"    New South Wales	167
"    United States: Dakota and Nebraska	401
"    "    Washington State	190
Credit associations :—	
In Belgium	45
"    Germany	1
Cress, prices	345, 457
Crofters' Commission :—	
Report on colonisation in Canada, 1895	326
"    fixation of rents, 1895	207
Crops :—	
Agricultural returns, Great Britain, 1895	77
"    "    "    1896	135
"    "    "    (Produce) 1896	355
"    "    Ireland, 1895	85
"    "    "    1895-6	323
In Argentina	25
"    Australia: Victoria	32, 389
"    Austria	25, 147, 269, 387
"    Belgium	270
"    Canada: Manitoba	151, 268, 388
"    Ontario	268
"    Denmark	26, 148
"    France	26, 149, 267, 386
"    Germany	26, 150, 270
"    Hungary	27, 150, 269
"    India	28, 146, 385
"    Italy	30, 151, 267
"    Roumania	30, 152, 267
"    Russia	30, 147, 271
"    Spain	30
"    Sweden	388
"    United States	31, 145, 266, 384
Cucumbers, prices	344, 456
Currants :—	
Crop of 1896	365
Prices	238, 366
Custom House and sampling imports, recommendations of Food Products	
Adulteration Committee	202
Dairying :—	
In Derbyshire	60
Imports of dairy produce	90, 212, 329, 430
Prices	104, 235, 343, 455
Australia :	
New South Wales	167
Queensland	307
South Australia, shipment of frozen produce	295
Victoria, exports of dairy produce	176
"    dairy factories	52
Denmark, exports of dairy produce	188
France :	
Dairy school at Mamirolle	183
Dairying in Western France	65
Germany, co-operative dairying	4

	Page
Dairying— <i>cont.</i>	
Sweden and Norway :	
Co-operative dairying	8
Dairy trade	7
United States : Nebraska and the Dakotas	400
" " Washington State	190
Dakota, dairying	400, 402
Damsons :—	
Crop of 1896	365
Prices	346, 367
Darwen Moor, regulation under the Inclosure Acts	82
Denmark :—	
Beet sugar industry	16
Co-operative poultry farming	373
Crops	26, 148
Egg exports	373
Milk and cream exports	397
Ministry of Agriculture	179
Trade in agricultural produce	188
Depôts for grain in Germany	53
Derbyshire, dairying	60
Diseases of animals :—	
Board of Agriculture report, 1895	321
Expenditure of County Councils, &c., England and Wales, 1894-5	426
" " Scotland, 1893-4	425
Pleuro-pneumonia and landing of Canadian cattle	82
Statistics :	
Pleuro-pneumonia and swine fever	108, 239, 347, 459
" " " Ireland	109, 207, 240, 348, 460
Anthrax, glanders, and rabies	109, 240, 348, 460
" " " Ireland	110, 207, 241, 349, 461
Swine fever, Report of Committee	79
Tick-fever, Australian conference on	297
Tuberculosis, Royal Commission on	88
Distillation tax on alcohol in Germany	253
Dogs :—	
Rabies, statistics of	109, 240, 348, 460
Report of Departmental Committee	419
Drawbacks :—	
On grain in Germany	254
" sugar	14, 254
Drying of raspberries	54
" of corn in Finland	406
Dundee, live stock at markets, prices and numbers weighed	91, 222, 330, 440
Duties :—	
(Customs) on eggs in Great Britain, 1842-60	369
" wheat in Spain	68, 410
" " Switzerland	72
(Excise) on sugar on the continent	14, 254
Earwigs	274
Edinburgh, live stock at markets, prices and numbers weighed	91, 222, 330, 440
Education :—	
Report of Committee of Council, 1895-6	208, 427
" " " Scotland, 1895-6	208, 325
Agricultural :	
Distribution of Parliamentary grants 1895-6	195
Egypt, School of agriculture	305
Palestine	72
Switzerland	74
Washington (State)	191
Dairy :	
France, School at Mamirolle	183
Sweden and Norway	9
Technical, report	83



Eggs :—	Page
Import trade in - - - - -	369
Imports, quarterly returns - - - - -	90, 214, 329, 431
Denmark, trade - - - - -	188
Victoria, exports - - - - -	176
Egypt, school of agriculture - - - - -	305
Emigration to California - - - - -	319
Endive, prices - - - - -	236, 457
Evaporation of raspberries in the United States - - - - -	54
Excise :—	
On alcohol in Germany - - - - -	253
„ beer and barley substitutes - - - - -	305
„ sugar on the continent - - - - -	14, 254
Experiments with potatoes in France - - - - -	70, 176
Exports :—	
Of cattle, sheep, and swine - - - - -	210, 429
„ horses - - - - -	215, 432
„ wool - - - - -	220, 245, 435
Falkland Islands, sheep - - - - -	311
Farcy. See <i>Glanders</i> .	
Farms :—	
Homestead Act in the United States - - - - -	404
Indebtedness in Germany - - - - -	251
„ „ (Bavaria) - - - - -	186
Mortgages in United States - - - - -	403
Property in Ontario, value - - - - -	175
Farmers and the Income Tax - - - - -	263
„ assessments to local rates - - - - -	379
Farringdon Market prices :—	
Fruit - - - - -	107, 238
Vegetables - - - - -	105, 236
Fertilisers and feeding stuffs :—	
Analyses in Great Britain - - - - -	376
German regulations for the sale of - - - - -	317
Figs, prices - - - - -	107, 238, 346
Finland butter trade - - - - -	306
„ kiln drying of corn - - - - -	406
Flax :—	
Area in Ireland, 1896 - - - - -	324, 421
Imports - - - - -	218, 437
Prices in Ireland, 1881 and 1895 - - - - -	87
Production in Ireland, 1895 - - - - -	85
„ „ 1896 - - - - -	421
Seeds, imports - - - - -	218, 437
Manitoba, area - - - - -	151
Flour :—	
Imports - - - - -	90, 216, 329, 433
India, imports - - - - -	19
Roumania, production - - - - -	313
Spain, trade - - - - -	68, 410
Food products adulteration, Report of Committee - - - - -	201
Foreign Office Reports - - - - -	64, 188, 311, 409
Forests (see also <i>Woods</i> ) :—	
Ireland, forestry operations, 1895-96 - - - - -	422
Norway - - - - -	399
Sweden - - - - -	399
Switzerland, area - - - - -	73
Foul-brood or bee-pest - - - - -	132
France :—	
Agricultural distress in Normandy - - - - -	66
Agriculture - - - - -	411
Agriculture in Western France - - - - -	64
Budget, agricultural, and discussion in the Chamber - - - - -	411
Census of 1896 - - - - -	406

		Page
France---cont.		
Corn prices	- - - - -	102, 233, 341, 453
Crops	- - - - -	26, 149, 267, 386
Dairy school at Mamirolle	- - - - -	183
Eggs, exports	- - - - -	369
Live weight statistics	- - - - -	180
Meat prices (Paris)	- - - - -	98, 229, 337, 449
Mushroom industry of Paris	- - - - -	59
Potato experiments	- - - - -	70, 176
Poultry	- - - - -	372
Starch, importation of cereals for	- - - - -	53
Tuberculin test for imported cattle	- - - - -	44
Frost, action of, on turnips and swedes	- - - - -	127
Frozen produce. See <i>Refrigerated produce</i> .		
Fruit:—		
Cold storage of Canadian fruit	- - - - -	302
Crop of 1896, prices, &c.	- - - - -	365
Cultivation and evaporation of raspberries in the United States	- - - - -	54
Imports	- - - - -	90, 217, 329, 365, 436
Prices	- - - - -	107, 238, 346, 365, 458
Australia, fruit growing in Victoria	- - - - -	48
Italy, grafting fruit trees	- - - - -	315
New Zealand, co-operation in marketing	- - - - -	407
Russia, import regulations	- - - - -	179
Fungi:—		
Cane-rust of raspberries ( <i>Glaspodium venetum</i> )	- - - - -	58
Hop mildew ( <i>Podosphæra castagnei</i> )	- - - - -	291
Lily disease ( <i>Polyactis cana</i> )	- - - - -	283
Orange-rust of raspberries ( <i>Cæoma nitens</i> )	- - - - -	58
Potato-scab	- - - - -	41
Red mould of hops ( <i>Podosphæra castagnei</i> )	- - - - -	291, 363
Smut of brome-grass ( <i>Ustilago bromivora</i> )	- - - - -	289
Snowdrops, a disease of ( <i>Polyactis galanthina</i> )	- - - - -	284
Tomato disease ( <i>Cladosporium lycopersici</i> )	- - - - -	154
Turnips and swedes, rottenness of ( <i>Polyactis</i> )	- - - - -	120
Future dealings in raw produce, action by German Government	- - - - -	253
Gambia, demand for agricultural implements		180
Gambling in corn, action by German Government	- - - - -	253
Game and poultry:—		
Imports	- - - - -	90, 329, 430
Australia, exports from Victoria	- - - - -	176
<i>Gastroidea polygoni</i>	- - - - -	274
German East Africa, wheat cultivation	- - - - -	308
Germany:—		
Cattle and sheep prices (Berlin)	- - - - -	98, 229, 337, 449
Cider industry	- - - - -	193
Co-operative agricultural societies	- - - - -	1
Corn depôts	- - - - -	53
Corn prices (Berlin)	- - - - -	103, 234, 342, 454
Crops	- - - - -	26, 150, 270
Depression, agricultural	- - - - -	251
Egg trade	- - - - -	370
Fertilisers and seeds, sale of	- - - - -	317
Indebtedness of farms in Bavaria	- - - - -	186
Legislation, agricultural	- - - - -	251
Registration of land	- - - - -	423
Tobacco growing	- - - - -	181
Glanders:—		
Returns of	- - - - -	109, 240, 348, 460
„ Ireland	- - - - -	110, 207, 241, 349, 461
Glasgow:—		
Live stock at markets, prices and numbers weighed	- - - - -	91, 222, 330, 440
Meat prices	- - - - -	97, 228, 336, 448
Vegetables and fruit, prices	- - - - -	345, 457



Goats :—	Page
Imports from Ireland to Great Britain	89, 328
Algeria, number	70
Argentina, number 1895	396
Switzerland, number in 1886	74
„ „ 1896	173
Gooseberries :—	
Crop in 1896	365
Prices	238, 366
Grafting fruit trees in Italy	315
Grain. See <i>Corn</i> .	
Grants for agricultural education, 1895-96	195
„ „ „ Switzerland	75
Grapes :—	
Imports	218, 436
Prices	107, 238, 346, 458
Grass :—	
Area	78, 135
„ in Ireland, 1895	85
„ „ 1896	323, 421
Production. See <i>Hay</i> .	
Smut on brome grass	289
Canada, Ontario, area	268
New Zealand, area	185
Russia, area	13
United States area, 1896	384
Greengages, prices	346
Guano, imports	221, 438
Hams :—	
Imports	90, 211, 329, 430
„ value per cwt.	99, 230, 338, 450
and bacon imported into India	19
Harvest reports :—	
Australia, Victoria, 1895-96	32
Austria, 1896	387
Belgium, 1896	270
Canada :	
Manitoba, 1896	268, 388
Ontario, 1896	268
Denmark, 1895	26, 148
France, 1896	267
Germany, 1896	270
Great Britain, 1896	355
Hungary, 1896	150
India (wheat), 1895-96	146
Ireland, 1896	420
Italy, 1896	267
Roumania, 1896	267
Russia, 1896	271
Sweden, 1896	388
United States, 1896	266, 384
Hay :—	
Area, 1896	135
„ Ireland, 1896	324
Imports	89, 215, 328, 360, 437
Production, 1895	78
„ 1896	359
„ Ireland, 1895	85
„ „ 1896	421
Canada :	
Manitoba, production, 1896	268
Ontario, area and production, 1896	268
New Zealand, area	185
Russia, production	13
United States, area and production, 1896	384

Heathland and mountain grazing, area	-	-	-	78
Heart and Dart moth ( <i>Agrotis exclamations</i> )	-	-	-	163
Hemp, imports	-	-	-	218, 437
Hides :—				
Imports	-	-	-	219, 329, 438
India, exports of hides and skins	-	-	-	20, 24
Hirings, agricultural, in Scotland	-	-	-	393
Holland :—				
Beet-sugar industry	-	-	-	14
Budget (agricultural)	-	-	-	305
Horses, regulations for importation	-	-	-	172
Margarine trade	-	-	-	67
Milk and cream exports	-	-	-	397
Homestead Act of the United States	-	-	-	404
Honey :—				
Production in Ireland	-	-	-	87
Australia, Victoria, exports	-	-	-	176
Belgium, regulations for the sale of	-	-	-	62
Hop :—				
Aphis ( <i>Phorodon humuli</i> )	-	-	-	273
Bug ( <i>Calocoris fulvomaculatus</i> )	-	-	-	161
Crop of 1896, prices, &c.	-	-	-	362
Mildew ( <i>Podosphæra castagnei</i> )	-	-	-	291, 363
Hops :—				
Area, 1896	-	-	-	135, 187
Imports	-	-	-	90, 217, 329, 436
New Zealand, area	-	-	-	185
Horse-radish, prices	-	-	-	105, 236, 345, 457
Horses :—				
Exports	-	-	-	214, 432
Imports	-	-	-	90, 214, 329, 432
„ from Ireland to Great Britain	-	-	-	89, 221, 328, 439
Algeria, number	-	-	-	70
Argentina, number in 1895	-	-	-	396
Denmark, trade	-	-	-	188
Holland, regulations for importation	-	-	-	172
Switzerland, number in 1886	-	-	-	74
„ „ 1896	-	-	-	173
United States, „ 1897	-	-	-	405
Uruguay, trade	-	-	-	172
Hungary :—				
Crops	-	-	-	27, 150, 269
Registration of land	-	-	-	423
Implements, demand for in Gambia	-	-	-	180
Imports :—				
Animals	-	-	-	90, 209, 329, 428
„ from Ireland to Great Britain	-	-	-	89, 221, 328, 439
Bristles	-	-	-	439
Corn	-	-	-	90, 216, 329, 433
„ (barley)	-	-	-	115
Dairy produce	-	-	-	90, 212, 329, 430
„ (milk and cream)	-	-	-	396
Eggs	-	-	-	90, 214, 329, 430
„ (1846-96)	-	-	-	369
Flax, hemp, jute, and seeds	-	-	-	218, 437
Fruit	-	-	-	90, 217, 329, 436
Hay and straw	-	-	-	89, 215, 328, 360, 437
Hides	-	-	-	219, 329, 438
Hops	-	-	-	90, 217, 329, 436
Lard	-	-	-	212, 329, 430
Manures	-	-	-	221, 438
Margarine	-	-	-	90, 212, 329, 430
Meat	-	-	-	90, 210, 329, 429
Oil seed cakes	-	-	-	439



Imports— <i>cont.</i>		Page
Poultry and game	- - - - -	90, 329, 430
Rabbits	- - - - -	210, 329, 430
Tallow and stearine	- - - - -	90, 221, 329, 439
Vegetables	- - - - -	90, 217, 329, 436
Wood and timber	- - - - -	219, 438
Wool	- - - - -	219, 245, 329, 434
Inclosure Acts, proceedings under	- - - - -	82
Income tax and farmers	- - - - -	263
Indebtedness of agricultural land in Germany	- - - - -	251
India:—	„ „ „ (Bavaria)	186
Crops	- - - - -	28, 146, 385
Irrigation	- - - - -	177
Moral and material progress, 1894–95	- - - - -	206
Trade in agricultural produce	- - - - -	19, 207
Indian corn. See <i>Maize</i> .		
Indigo exported from India	- - - - -	20
Insects in the spring and summer of 1896	- - - - -	273
Insects, injurious:—		
Army worm ( <i>Leucania unipuncta</i> )	- - - - -	269, 275
Bean aphid ( <i>Aphis rumicis</i> )	- - - - -	273
Bean beetle ( <i>Bruchus rufimanus</i> )	- - - - -	33
Cabbage butterflies ( <i>Pieris</i> )	- - - - -	274
Carrot fly ( <i>Psila rosæ</i> )	- - - - -	390
Cherry moth ( <i>Argyresthia nitidella</i> )	- - - - -	153
Codlin moth ( <i>Carpocapsa pomonella</i> ) in walnuts	- - - - -	160
Corn moth ( <i>Sitotroga cerealella</i> )	- - - - -	280
Earwigs	- - - - -	274
<i>Gastroidea polygoni</i>	- - - - -	274
Heart and Dart moth ( <i>Agrotis exclamationis</i> )	- - - - -	163
Hop aphid ( <i>Phorodon humuli</i> )	- - - - -	273
Hop bug ( <i>Calocoris fulvomaculatus</i> )	- - - - -	161
Narcissus fly ( <i>Merodon narcissi</i> )	- - - - -	287
Onion fly ( <i>Phorbia cepetorum</i> )	- - - - -	157
Snowdrop mite ( <i>Rhizoglyphus galanthi</i> ?)	- - - - -	286
Surface caterpillars ( <i>Agrotis</i> )	- - - - -	163
Swift moth ( <i>Hepialus lupulinus</i> )	- - - - -	36
Thousand legs	- - - - -	274
<i>Thrips</i>	- - - - -	275
<i>Tortrix viridana</i>	- - - - -	273
Turnip moth ( <i>Agrotis segetum</i> )	- - - - -	163
Wireworms	- - - - -	274
Woolly aphid ( <i>Schizoneura lanigera</i> )	- - - - -	276
Inspection:—		
Of animals and meat in Queensland	- - - - -	61
„ dairy produce in Washington (State)	- - - - -	191
Ireland:—		
Agricultural returns, 1895	- - - - -	85
„ „ 1895–96	- - - - -	323
„ „ produce, 1896	- - - - -	420
Diseases of animals, 1894	- - - - -	207
„ „ quarterly returns	- - - - -	109, 240, 348, 460
Forestry statistics, 1895–96	- - - - -	422
Local taxation returns, 1895	- - - - -	427
Migratory labourers	- - - - -	84, 325
Prices of agricultural produce, 1881 and 1895	- - - - -	87
Woods and plantations, area	- - - - -	84
Irrigation:—		
In India	- - - - -	177
„ Russian Turkestan	- - - - -	54
Italy:—		
Crops	- - - - -	30, 151, 267
Egg exports	- - - - -	369
Grafting fruit trees	- - - - -	315
Plants, introduction of	- - - - -	314

	Page
Jewish agriculture in Palestine . . . . .	71
Jute :—	
Imports . . . . .	218, 437
India, exports . . . . .	20, 207
Kainit as preventive of insects, &c. . . . .	160
Kansas, exports from, <i>viâ</i> the Gulf of Mexico . . . . .	191
Kiln drying of corn in Finland . . . . .	406
Labour :—	
Agricultural, in April 1896 . . . . .	62
Hours of, Board of Trade Report, 1894 . . . . .	199
Migration of Irish labourers . . . . .	84
“Ladled” butter in America . . . . .	402
Lamb, prices . . . . .	96, 227, 335, 447
Langdale (Great) Moor, regulation under Inclosure Acts . . . . .	82
Land :—	
Assessment to income tax . . . . .	263
“    local rates . . . . .	379
Indebtedness in Germany . . . . .	251
“    “    (Bavaria) . . . . .	186
“    “    United States . . . . .	403
Ownership in France . . . . .	411
Rateable value, 1870–94 . . . . .	426
Registry in Germany and Austria-Hungary . . . . .	423
Revenues of the Crown . . . . .	326
Tenure in Switzerland . . . . .	74
In Wales, Report of Royal Commission . . . . .	321
United States. Effect of the Homestead Act . . . . .	404
Lard, imports . . . . .	212, 329, 431
Leaflets, list of . . . . .	114, 244, 354, 464
Leeds, live stock at markets, prices and numbers weighed . . . . .	91, 222, 330, 440
Leeks, prices . . . . .	105, 236, 345, 457
Legislation (agricultural) in Germany . . . . .	251
Leicester, live stock at markets, numbers weighed . . . . .	91, 222, 330, 440
Lemons, imports . . . . .	218, 436
Lettuce, prices . . . . .	236, 345, 457
Lily disease ( <i>Polyactis cana</i> ) . . . . .	283
Lime as preventive of insect attacks . . . . .	159, 165
Lincoln, live stock at markets and numbers weighed . . . . .	91, 222, 330, 440
Linseed :—	
Imports . . . . .	218, 437
Trade of Antwerp . . . . .	320
New Zealand, area . . . . .	185
Live stock :—	
Exports . . . . .	210, 429
Imports . . . . .	90, 209, 329, 428
“    from Ireland to Great Britain . . . . .	89, 221, 328, 439
Market returns, numbers weighed and prices . . . . .	91, 222, 330, 440
Number, 1896 . . . . .	135
“    Ireland, 1896 . . . . .	324
Pleuro-pneumonia and Canadian cattle . . . . .	82
Prices . . . . .	91, 222, 330, 440
Tuberculosis, Royal Commission Report . . . . .	88
Algeria, number . . . . .	70
Argentina, number in 1895 . . . . .	396
Australia :—	
Tick Fever Conference . . . . .	297
New South Wales, dairy cows . . . . .	167
Queensland, inspection . . . . .	61
Austria, regulations for importation . . . . .	63



Live stock— <i>cont.</i>	
Canada :	Page
Manitoba, number, 1896 -	389
Ontario, number -	269
„ value -	175
Denmark, trade in horses -	188
Finland, cattle -	306
France, statistics of live weight -	180
„ tuberculin and imported cattle -	44
Holland, regulations for importation of horses -	172
Russia, cattle raising -	10
Switzerland, number in 1886 -	74
„ „ 1896 -	173
United States, cattle raising industry -	257
„ number, 1897 -	405
Uruguay, trade -	172
Venezuela, cattle raising -	189
Liverpool :—	
Live stock at markets, prices and numbers weighed -	91, 222, 330, 440
Meat, prices -	97, 228, 336, 448
Vegetables and fruit, prices -	344, 456
Local rates, assessment of farmers -	379
Local taxation returns :—	
1894-95, Part I. -	322
„ Part II. -	425
Ireland, 1895 -	427
Scotland, returns, 1893-94 -	424
London :—	
Corn prices -	103, 234, 343, 454
Live stock at markets, prices and numbers weighed -	91, 222, 330, 440
Meat, prices -	96, 227, 335, 447
Vegetables and fruit, prices -	105, 236, 344, 456
Lucerne, area -	299
Machinery, exhibition at Kieff -	418
Maize :—	
Imports -	90, 216, 329, 433
Argentina, cultivation -	416
Austria, area and production, 1896 -	387
Canada, maize used as fodder -	169
Roumania, production, 1896 -	268
United States, acreage, 1896 -	145, 266, 384
„ production, 1896 -	266, 384
Uruguay, area and production -	398
Mallein, injection of horses imported into Holland -	172
Malting and seed barley competition of 1896 -	393
Mamirolle Dairy School -	183
Mangold :—	
Area and production, Ireland, 1895 -	85
Area, Ireland, 1896 -	324
„ and production, Ireland, 1896 -	420
Prices -	106, 237
New Zealand, area -	186
Manitoba, crops -	151
„ „ and live stock, 1896 -	388
Manures :—	
Analyses in Great Britain -	376
Imports -	221, 438
Germany, carriage of -	309
India, exports -	23
Margarine :—	
Imports -	90, 212, 329, 431
Prices -	104, 235, 343, 455
Report of Food Products Adulteration Committee -	201
Denmark, imports and consumption -	189
Germany, legislation -	255
Holland, trade -	67

Markets and Fairs :—	Page
(Weighing of Cattle Act), Board of Agriculture Report	321
Numbers weighed and prices	91, 222, 330, 440
Marking of Australian produce	174
Marrows, prices	236, 344
Meat (see also <i>Beef, Mutton, &amp;c.</i> ) :—	
Imports	90, 210, 329, 429
„ value per cwt.	99, 230, 338, 450
Prices	79, 96, 227, 335, 447
Production in France	413
Australia :	
Queensland, inspection	61
South Australia, shipment of frozen meat	295
Victoria, exports	176
United States, cattle industry	257
Medlars, prices	346
Melons, prices	238, 346
Migratory labourers in Ireland	84, 325
Milk :—	
Adulteration, Local Government Board Report	304
Dairying in Derbyshire	60
Imports	90, 212, 329, 396, 431
Australia : New South Wales, dairying	168
France, production	413
„ (Western), dairying	65
Switzerland, dairying	74
United States, production in Dakota and Nebraska	401
Mint, prices	105, 236, 457
Molasses, German bounty on production of alcohol from	253
Morocco, exports of eggs	375
Mortgages in Germany	251
„ „ (Bavaria)	186
„ „ United States	403
Mountain and heath land used for grazing	78
Mules :—	
In Algeria	70
„ Switzerland, 1886	74
„ „ 1896	173
„ United States, 1897	405
Mushroom industry of Paris	59
Mushrooms, prices	105, 236, 344, 456
Mustard, area	301
Mutton :—	
Imports	90, 210, 329, 429
„ value per cwt.	99, 230, 338, 450
Prices	96, 227, 335, 447
Australia : Victoria, exports	176
New Zealand, mutton and wool trade	294
Muzzling of dogs, Report of Departmental Committee	419
Naphthaline and foul brood	133
Narcissus fly ( <i>Merodon narcissi</i> )	287
Nebraska, dairying	400, 402
Nectarines, prices	107, 238
Netherlands :—	
Beet-sugar industry	14
Budget, agricultural	305
Horses, regulations for importation	172
Margarine trade	67
Milk and cream, exports	397
New South Wales :—	
Dairying	167
Wheat growing	170



New Zealand :—		Page
Agricultural returns, 1895-96	- - - - -	185
Co-operation in marketing fruit	- - - - -	407
Mutton and wool trade	- - - - -	294
Newcastle, live stock at markets, prices and numbers weighed	- 91, 222, 330, 440	440
Nitrate of soda, imports	- - - - -	221, 438
Normandy, agricultural distress	- - - - -	66
Norway :—		
Agriculture	- - - - -	317
Dairy trade	- - - - -	7
Forestry	- - - - -	399
Norwich, live stock at markets and numbers weighed	- 91, 222, 330, 440	440
Nuts, prices	- 107, 346, 368, 458	458
Oaks damaged by caterpillars	- - - - -	273
Oats :—		
Area, 1896	- - - - -	135
„ Ireland, 1885	- - - - -	85
„ „ 1896	- - - - -	324
Imports	- 90, 216, 329, 433	433
Prices and quantities sold, Gazette averages	- 100, 231, 339, 451	451
Production, 1896	- - - - -	356
„ and prices	- - - - -	78
„ Ireland, 1895	- - - - -	85
„ „ 1896	- - - - -	421
Austria, area and production, 1896	- - - - -	387
Belgium, prices	- 102, 233, 341, 453	453
„ production, 1896	- - - - -	270
Canada :		
Cultivation of oats	- - - - -	301
Manitoba, area	- - - - -	151, 388
„ production, 1896	- - - - -	268, 388
Ontario, area and production, 1896	- - - - -	268
Denmark, production, 1895	- - - - -	26, 148
France, area and production, 1896	- - - - -	267
„ prices	- 102, 233, 341, 453	453
Germany, prices in Prussia	- - - - -	252
„ „ „ (Berlin)	- 103, 234, 342, 454	454
Hungary, area and production, 1896	- - - - -	151
Italy, area and production, 1896	- - - - -	267
New Zealand, area, 1895-96	- - - - -	185
Roumania, area and production, 1896	- - - - -	267
Russia, production, 1896	- - - - -	272
Sweden, production, 1896	- - - - -	388
United States, area, 1896	- 145, 266, 384	384
„ production, 1896	- 266, 384	384
Oilseed cakes, imports	- - - - -	439
Oilseeds exported from India	- - - - -	207
Onion fly ( <i>Phorbia cepetorum</i> )	- - - - -	157
Onions :—		
Imports	- 90, 218, 329, 436	436
Prices	- 105, 236, 344, 456	456
Ontario :—		
Crops	- - - - -	268
Value of farm property	- - - - -	175
Opium exported from India	- - - - -	20
Orange rust of raspberries ( <i>Caeoma nitens</i> )	- - - - -	58
Oranges, imports	- - - - -	218, 436
Orchards, Area in New Zealand	- - - - -	186
Ordnance Survey maps	- - - - -	82
„ „ „ Departmental Committee's Report	- - - - -	197
Palestine, agriculture	- - - - -	71
Paraffin emulsions	- - - - -	159, 278, 392

Paris :—	Page
Corn prices - - - - -	103, 234, 342, 454
Meat „ (live and dead weight) - - - - -	98, 229, 337, 449
Mushroom industry - - - - -	59
Parliamentary publications - - - - -	77, 195, 321, 419
Parsley, prices - - - - -	105, 236, 344, 456
Parsnips, prices - - - - -	106, 345, 457
Pasture :—	
Area - - - - -	78
„ Ireland, 1895 - - - - -	85
„ „ 1896 - - - - -	420
New Zealand, area - - - - -	185
Peaches, prices - - - - -	107, 238, 346
Pears :—	
Crop of 1896 - - - - -	365
Imports - - - - -	90, 218, 329, 436
Prices - - - - -	107, 346, 368, 458
Peas :—	
Imports - - - - -	216, 433
Prices - - - - -	105, 236
New Zealand, area - - - - -	185
and beans, area in Ireland, 1896 - - - - -	324
Sweden, production, 1896 - - - - -	388
Perth, live stock at markets, prices and numbers weighed - - - - -	91, 222, 330, 440
Peziza :—	
In potatoes - - - - -	124
„ turnips and swedes - - - - -	120
Phosphate of lime, imports - - - - -	221, 438
<i>Phylloxera</i> , Russian regulations to prevent introduction - - - - -	179
Pigs. See <i>Swine</i> .	
Pine-apples, prices - - - - -	107, 238, 346, 458
Plantations and woods :—	
Area - - - - -	78
„ Ireland - - - - -	84
Plants :—	
Introduction into Italy - - - - -	314
„ „ Russia - - - - -	179
Pleuro-pneumonia and landing of Canadian cattle - - - - -	82
Quarterly returns - - - - -	108, 239, 347, 459
„ „ Ireland - - - - -	109, 240, 348, 460
Plum culture in Bosnia - - - - -	173
Plums :—	
Crop of 1896 - - - - -	365
Imports - - - - -	218, 367, 436
Prices - - - - -	238, 346, 367
Poland, agriculture - - - - -	66
<i>Polyactis</i> :—	
In lilies - - - - -	233
„ potatoes - - - - -	124
„ snowdrops - - - - -	234
„ turnips and swedes - - - - -	120
Poor Rate returns - - - - -	322
„ assessment of farmers to - - - - -	379
Population (agricultural) of France - - - - -	406
„ „ Germany - - - - -	254
„ „ Uruguay - - - - -	398
Pork :—	
Imports - - - - -	90, 210, 329, 430
„ value per cwt. - - - - -	99, 230, 338, 450
Prices - - - - -	96, 227, 335, 447
„ Ireland, 1881 and 1895 - - - - -	87
Denmark, trade - - - - -	188
Post Office Savings Banks - - - - -	110, 241, 349, 461
Potato cultivation, experiments in France - - - - -	70, 176
Potato scab - - - - -	41
Potatoes :—	
Area, 1896 - - - - -	135
„ Ireland, 1895 - - - - -	85

Potatoes— <i>cont.</i>	Page
Area, Ireland, 1896	324
Attacked by <i>Botrytis</i> ( <i>Peziza</i> )	124
Imports	90, 217, 329, 436
Prices	105, 236, 344, 456
Production, 1895	78
" 1896	358
" Ireland, 1895	85
" " 1896	421
Argentina, area	26
Canada: Manitoba, area, 1896	151, 388
" " production, 1896	388
" Ontario, area, 1896	268
Denmark, production, 1895	26, 148
Sweden, production, 1896	388
United States, area and production, 1896	266, 384
Potter, Prof. M. C., Rottenness of turnips and swedes in store	120
Poultry :—	
Imports (with game)	90, 329, 430
Industry on the Continent	369
Number in Ireland, 1896	324
Victoria, exports	176
Prices :—	
Agricultural produce in Ireland	87
Corn	78
" British quarterly averages	100, 231, 339, 451
" " weekly " "	101, 232, 340, 452
" Imported	102, 233, 341, 453
" In Belgium, France, Germany	102, 233, 341, 453
" " London, Paris, Berlin	103, 234, 342, 454
" (Barley)	119
Dairy produce	104, 235, 343, 455
Eggs (imported)	371
Fruit	107, 238, 346, 458
Hops	363
Live stock at British markets	91, 222, 330, 440
" " Berlin, Paris, Chicago	98, 229, 337, 449
Margarine	104, 235, 343, 455
Meat :—	
In London	96, 227, 335, 447
" Liverpool and Glasgow	97, 228, 336, 448
" Paris	98, 229, 337, 449
" imported	99, 230, 338, 450
" United States, cattle, live weight	260
" (beef)	79
Vegetables	105, 236, 344, 456
Wool	108, 239, 249, 347, 459
Protection, Switzerland and Prussia :—	72
Agricultural legislation	251
Carriage of manures	309
Queensland :—	
Dairy produce	307
Inspection of animals and meat	61
Wheat cultivation and trade	50
Rabbits :—	
Imports	90, 210, 329, 430
Victoria, exports	176
Rabies :—	
Quarterly returns	109, 240, 348, 460
" " Ireland	110, 207, 241, 349, 461
Report of Departmental Committee on Dogs	419
Radishes, prices	105, 237, 345, 457



Raiffeisen Credit Associations :—	Page
In Belgium - - - - -	45
„ Germany - - - - -	2
Ranching in the United States - - - - -	257
Rape, area in New Zealand - - - - -	186
Rapeseed, imports - - - - -	218, 437
Raspberries :—	
Crop of 1896 - - - - -	365
Cultivation and evaporation in the United States - - - - -	54
Diseases of raspberry plants - - - - -	58
Prices - - - - -	238
Rateable value of lands, 1870-94 - - - - -	426
Rates (see also <i>Taxation, Local</i> ), assessment of farmers - - - - -	379
Red mould on hops - - - - -	291
Refrigerated produce :	
Butter from Canada - - - - -	170
Fruit „ „ - - - - -	302
From South Australia - - - - -	295
„ Victoria - - - - -	176
Registration of dogs, suggested - - - - -	419
„ titles to land in Germany and Austria-Hungary - - - - -	423
Remedies for injurious insects and fungi, see under <i>Insects</i> and <i>Fungi</i> .	
<i>Rhizoglyphus</i> in snowdrops - - - - -	286
Rhubarb, prices - - - - -	105, 237, 345, 456
Rice exported from India - - - - -	207
Rottenness of turnips and swedes in store - - - - -	120
Roumania :—	
Agriculture - - - - -	312
Crops - - - - -	30, 152, 267
Rural depopulation in France - - - - -	406
Russia :—	
Advances on grain - - - - -	318
Cattle-raising - - - - -	10
Crops - - - - -	30, 147, 271
Department of Agriculture - - - - -	313
Eggs, export - - - - -	369
Grass, area - - - - -	13
Importation of plants, fruit, and vegetables, regulations - - - - -	179
Machinery exhibition at Kieff - - - - -	418
Poultry industry - - - - -	371
State loans for agricultural improvements - - - - -	415
Wheat cultivation in South Russia - - - - -	414
Finland, butter trade - - - - -	306
„ kiln drying of corn - - - - -	406
Poland, agriculture - - - - -	66
Turkestan, „ - - - - -	54
Rye :—	
Area and production in Ireland, 1895 - - - - -	85
„ „ „ 1896 - - - - -	420
„ in Ireland, 1896 - - - - -	324
Austria, area and production, 1896 - - - - -	387
Belgium, production, 1896 - - - - -	270
Canada, Ontario, area and production, 1896 - - - - -	268
Denmark, production, 1895 - - - - -	26, 148
France, area and production, 1896 - - - - -	267
Germany, production, 1896 - - - - -	271
„ prices - - - - -	252
Hungary, area and production, 1896 - - - - -	150
New Zealand, area - - - - -	185
Roumania, area and production, 1896 - - - - -	267
Russia, production, 1896 - - - - -	271
Sweden, production, 1896 - - - - -	388
United States, area and production, 1896 - - - - -	266, 384

Saffron cultivation in Spain - - - - -	192
Salford, live stock at markets and numbers weighed - - - - -	91, 222, 330, 440

	Page
Savoys, prices	105, 345, 457
Science and Art Department, funds for technical education	83
<i>Sclerotinia</i> ( <i>Peziza</i> ) in turnips and swedes	120
Scotland:—	
Crofters' Commission Report, 1895	207
" " " (colonisation in Canada)	326
Education, Report, 1895-96	208, 325
Local Taxation Returns, 1893-4	424
Wages, agricultural	393
Schulze-Delitzsch Credit Associations	1
Sea-kale, prices	105, 456
Seeds:—	
Imports	218, 437
Germany, regulations for sale	317
India, exports	20, 23
Sheep:—	
Exports	210, 429
Imports	90, 209, 329, 428
" from Ireland to Great Britain	89, 221, 328, 439
Number in Great Britain, 1896	135
" " " 1875-96	245
Prices	97, 228, 336, 448
" and numbers weighed at markets	91, 222, 330, 440
Scab in Ireland, 1894	207
Tar branding	44
Algeria, number	70
Argentina, number, 1896	396
Canada:	
Manitoba, number, 1896	389
Ontario, number, 1896	269
Falkland Islands	311
France (Paris) prices	98, 229, 337, 449
New Zealand	186
" mutton and wool trade	294
Switzerland, 1886	74
" 1896	173
United States, number in 1897	405
Uruguay, trade	172
Shipment of frozen produce from South Australia	295
Shrewsbury, live stock at market, prices and numbers weighed	91, 222, 330, 440
Smut of brome grass ( <i>Ustilago bromivora</i> )	289
Snowdrops, disease of	284
Societies, co-operative:—	
In Belgium	45
" Germany	1
Soot as preventive of insect attacks	159, 165
South Australia, shipment of frozen produce	295
Spain:—	
Agricultural colonies	181
Depression in agriculture	320
Saffron cultivation	192
Wheat duty	68, 189
" production and trade	30, 68, 409
Spinach, prices	236
Spirit monopolies in Poland	67
" bounty on alcohol in Germany	253
Sprouts, prices	105, 345, 457
Starch, importation of corn into France for making	53
State-aid to Agriculture: Distribution of grants for agricultural education	195
Australia (South), shipment of frozen produce	295
Germany	251
Holland, agricultural budget	305
Russia, advances on grain	318
" " for agricultural improvements	415
Spain, agricultural colonies	181
" amounts granted in relief	320
Switzerland	75

Stratford Market :—	Page
Prices, fruit - - - - -	107, 238
„ vegetables - - - - -	106, 237
Straw, imports - - - - -	215, 437
Strawberries :—	
Crop of 1896 - - - - -	365
Prices - - - - -	107, 238, 366
Sugar :—	
Bounties in Germany - - - - -	254
(Beet) industry on the Continent - - - - -	14
Belgium, sale of - - - - -	309
India, imports and exports - - - - -	20
Sulphate of copper solutions - - - - -	71, 157
Surface caterpillars - - - - -	163
Sweden :—	
Beet sugar industry - - - - -	17
Crops - - - - -	388
Dairy trade - - - - -	7
Forestry - - - - -	399
Milk and cream exports - - - - -	396
Swedes :—	
Prices - - - - -	106, 344, 456
Rottenness of, in store - - - - -	120
Swift moth ( <i>Hepialus lupulinus</i> ) - - - - -	36
Swine :—	
Exports - - - - -	210, 429
Fever, Report of Departmental Committee - - - - -	79
„ Quarterly returns - - - - -	108, 239, 347, 459
„ „ „ Ireland - - - - -	109, 207, 240, 349, 460
Imports - - - - -	209, 429
„ from Ireland to Great Britain - - - - -	89, 221, 328, 439
Number, 1896 - - - - -	135
Prices and numbers weighed at markets - - - - -	91, 222, 330, 440
Algeria, number - - - - -	70
Argentina, number, 1895 - - - - -	396
Canada :	
Manitoba, number, 1896 - - - - -	389
Ontario, number, 1896 - - - - -	269
Denmark, trade - - - - -	188
France, prices at Paris - - - - -	98, 229, 337, 449
Switzerland, 1886 - - - - -	74
„ 1896 - - - - -	173
United States, number in 1897 - - - - -	405
Uruguay, trade - - - - -	172
Switzerland :—	
Agriculture - - - - -	73
and protection - - - - -	72
Live stock census, 1886 - - - - -	74
„ „ 1896 - - - - -	173
Tallow and stearine, imports - - - - -	90, 221, 329, 439
Tar-branding of sheep - - - - -	44
Taxation :—	
Farmers and the income tax - - - - -	263
„ „ assessments to local rates - - - - -	379
Local taxation returns :	
1894-95, Part I. - - - - -	322
1894-95, Part II. - - - - -	425
Ireland, 1895 - - - - -	427
Scotland, 1893-4 - - - - -	424
Tea : Indian imports and exports - - - - -	20, 24, 207
Technical Education, return of expenditure - - - - -	83
Temporary admission of corn into France for starch-making - - - - -	53
Texas fever in Australia - - - - -	297
“Thousand-legs” - - - - -	274
<i>Thrips</i> - - - - -	275



	Page
Tick-fever, Australian conference on - - - - -	297
Timber. See <i>Wood</i> .	
Tithe Acts, proceedings under - - - - -	82
Tobacco growing in Germany - - - - -	181
Tomato disease ( <i>Cladosporium lycopersici</i> ) - - - - -	154
"    black rot ( <i>Macrosporium tomato</i> ) - - - - -	154
Tomatoes, prices - - - - -	107, 238, 346, 458
<i>Tortrix viridana</i> - - - - -	273
Traction engines on roads, Report of Committee - - - - -	203
Trees, Ireland, area in, under different kinds - - - - -	84
"    "    Forestry operations, 1895-6 - - - - -	422
Tuberculin test and imports of cattle into France - - - - -	44
Tuberculosis, Royal Commission on - - - - -	88
Turkestan, agriculture - - - - -	54
Turnip moth ( <i>Agrotis segetum</i> ) - - - - -	163
Turnips :—	
Area and production in Ireland, 1895 - - - - -	85
"    in Ireland, 1896 - - - - -	324
"    and production in Ireland, 1896 - - - - -	420
Prices - - - - -	105, 236, 344, 456
Rottenness of, in store - - - - -	120
New Zealand, area - - - - -	186
United States :—	
Cattle prices (Chicago) - - - - -	99, 230, 338, 450
Cattle-raising industry - - - - -	257
Crops - - - - -	31, 145, 266, 384
Export of produce by the Gulf of Mexico - - - - -	191
Homestead Act - - - - -	404
"    Ladled " butter - - - - -	402
Live stock - - - - -	405
Mortgages on farms - - - - -	403
Raspberry cultivation and evaporation - - - - -	54
California, emigration to - - - - -	319
Dakota and Nebraska, dairying - - - - -	400
Oregon, cost of farming - - - - -	315
Washington (State), dairying - - - - -	190
Uruguay :—	
Agricultural Department - - - - -	418
Cultivation of cereals - - - - -	398
Live stock trade - - - - -	172
Veal, prices - - - - -	96, 227, 335, 447
Vegetables :	
Imports - - - - -	90, 217, 329, 436
Prices - - - - -	105, 236, 344, 456
Venezuela, cattle-raising - - - - -	189
Vetches, area in New Zealand - - - - -	185
Vines :—	
Palestine - - - - -	72
Russia, prohibition to import - - - - -	179
Switzerland - - - - -	73
Turkestan - - - - -	54
Victoria :—	
Crops - - - - -	32, 389
Dairy and bacon factories - - - - -	52
Exports of perishable produce, 1895-96 - - - - -	175
Fruit-growing - - - - -	48

	Page
Wages, Board of Trade Report, 1894	199
„ agricultural, in Scotland, 1896	393
Wakefield, live stock at markets and numbers weighed	91, 222, 330, 440
Wales, Report of Royal Commission on Land in	321
Walnuts attacked by codlin moth	160
Warsaw wool fair	67
Washington (State) dairying	190
Weighing of Cattle Act, 1891 :	
Returns	91, 220, 330, 440
Statistics in France	180
Weights and measures, Board of Trade Report, 1895-96	327
Wheat:—	
Area, 1896	135
„ In Ireland, 1895	85
„ „ 1896	324, 421
Imports	90, 216, 329, 433
Prices and quantities sold	100, 231, 339, 451
„ in Ireland, 1881 to 1895	87
Production, 1896	355
„ and prices in Great Britain	78
„ in Ireland, 1895	85
„ „ 1896	421
Argentina, cultivation	142, 416
Africa (German East), cultivation	308
Australia, New South Wales, cultivation	170
„ Queensland, cultivation and trade	50
„ Victoria, area and production, 1895-6	32
„ „ „ 1896-7	389
Austria, area and production, 1896	387
Belgium, prices	102, 233, 341, 453
„ production in 1896	270
Canada :	
Manitoba, area and production, 1896	151, 268, 388
Ontario „ „ „	268
Denmark, production, 1895	26, 148
France, area and production, 1896	267
„ prices	102, 233, 341, 453
„ (Western), cultivation	64
Germany, production in 1896	270
„ prohibition of gambling	253
„ prices in Prussia	252
„ „ (Berlin)	103, 234, 342, 454
Hungary, area and production, 1896	150
India, area and production, 1895-6	28, 146
„ area, 1896-7	385
„ exports	21, 207
Italy, production, 1896	267
New Zealand, area	185
Roumania, area and production, 1896	267
Russia, production, 1896	271
„ (south), cultivation	414
Spain, duties	68, 189, 410
„ production and trade	409
„ trade	30, 68
Sweden, production in 1896	388
Switzerland, duty	72
United States, area, 1896	145, 266, 384
„ production, 1896	266, 384
„ Oregon, cost of cultivation	315
Uruguay, area and production	398
Wireworms	274
Wood and timber:—	
Imports	219, 438
India, exports	20
Woods and Forests, Report, 1895-6	325
Woods and Plantations:—	
Area, Great Britain	78

Woods and Plantations— <i>cont.</i>	Page
Area, Ireland, 1895 - - - - -	84
"    "    1896 - - - - -	323
Norway and Sweden - - - - -	399
Wool:—	
Exports - - - - -	220, 434
Imports - - - - -	219, 329, 435
Prices - - - - -	108, 239, 347, 459
Supply of the United Kingdom - - - - -	245
India, trade - - - - -	19, 24
New Zealand, trade - - - - -	294
Poland, prices - - - - -	67
Woolly aphid ( <i>Schizoneura lanigera</i> ) - - - - -	276

York, live stock at markets and numbers weighed - - - 91, 222, 380, 440

*Presd.*  
15 MAR. 97







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# The Journal

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	Page
CO-OPERATIVE AGRICULTURAL SOCIETIES IN GERMANY	1
DAIRY TRADE OF SWEDEN AND NORWAY	7
CATTLE RAISING IN RUSSIA	10
BEET-SUGAR INDUSTRY ON THE CONTINENT	14
INDIAN TRADE IN AGRICULTURAL PRODUCE	19
REPORTS ON FOREIGN CROPS	25
INJURIOUS INSECTS AND FUNGI	33
GENERAL AGRICULTURAL NOTES	44
FOREIGN OFFICE REPORTS	64
PARLIAMENTARY PUBLICATIONS	77
IMPORTS OF AGRICULTURAL PRODUCE	89
PRICES OF LIVE STOCK	91
STATISTICAL TABLES	96

(For detailed Table of Contents see page vii of Advertisements.)



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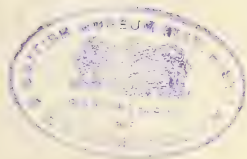




# The Journal

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### CO-OPERATIVE AGRICULTURAL SOCIETIES IN GERMANY.

Co-operative associations in Germany were legally recognised for the first time by an Act passed in 1868, but the influence of this legislation upon the development of co-operation amongst agriculturists was not so beneficial as that of the law of the 1st May 1889, which differed essentially from the earlier measure, inasmuch as it gave a *locus standi* in courts of law to associations constituted on the basis of limited liability, provided for the registration of co-operative societies, and empowered such registered societies to hold and transfer property.

All societies, whatever may be their system of liability, may be registered under certain conditions; but the law was introduced mainly with the idea of stimulating co-operation by limiting the liability of the individual members, and it was hoped that this would be a great incentive to farmers to combine. Agriculturists in Germany appear, however, to find little attraction in limited liability, for of the many hundreds of co-operative societies existing in the rural districts of the Empire, very few are constituted on that principle.

In the earlier years of the movement, co-operation found its most effective application in Germany in the establishment of small loan societies or people's banks. At first, these associations were founded mainly for the benefit of the artisan class in the towns, and their operations were confined to the granting of loans on easy terms to their members. The earliest co-operative organisation for the purchase of raw material was formed by Herr Schultze-Delitzsch in 1849 amongst some cabinet makers in

his native town, and this was soon followed by the establishment of a similar society for shoemakers. In the course of the next few years, the number of associations for the purchase in common of raw materials rapidly increased, and after a time, these bodies and the loan societies were, in many instances, federated.

Up to 1870, this movement had made little progress in the rural districts, but the necessity of economy in procuring manures and implements was soon afterwards recognised by agriculturists, and co-operative societies for the purchase of farming requisites have since increased in number from year to year.

As an example of this development in more recent years, it may be observed that whereas in 1890 the number of registered co-operative associations of various kinds in Germany was 3,006, seven years later, in 1896, the number was 7,762, comprising 5,382 agricultural credit associations; 894 societies for the purchase in common of fertilisers, seeds, and implements; 1,262 co-operative dairies; and 224 other co-operative societies.

The agricultural co-operative societies are generally united to provincial and central unions upon a co-operative basis of common work. The strongest central organisation was founded in 1884 under the title of "The General Union of German Agricultural Co-operative Societies." Its meetings are held at Offenbach-on-Main, and it comprises 23 provincial unions, in which are associated 27 central co-operative societies, and 2,989 individual local co-operative societies, dairies, and agricultural banks.\* Next to it in importance must be mentioned the General Raiffeisen Union, comprising in all about 2,000 societies, nearly all of which are credit associations. There are also 11 unions of a smaller kind, which embrace in all 2,657 co-operative associations, of which 2,300 are credit societies.

It may be of interest to review briefly the objects and operations of the different co-operative organisations to which reference has been made in the foregoing paragraphs.

The agricultural credit associations hold perhaps the first place, on account of their popularity as well as numerically, among the co-operative institutions in the rural districts of Germany. Their functions are mainly to satisfy the needs of agriculture as regards credit, and especially as regards personal credit, though in many instances they have taken up other branches of business on behalf of their members. These societies are of two kinds, viz.: the Schultze-Delitzsch and the Raiffeisen Credit Associations. As the differences in the organisation of these institutions have been described in an earlier number of this Journal,† it is sufficient here to state that the Schultze-Delitzsch societies have gradually proved to be less and less adapted to the interests of agriculture, and in point of fact they

\* The 2,989 societies embraced in the General Union on the 1st February 1896 included 1,539 agricultural credit banks, 657 dairy societies, and 793 other co-operative associations. The total number of societies included in the General Union in April last is stated to have risen to between 3,400 and 3,500.

† Journal of the Board of Agriculture, Vol. II., No. 2, p. 125.

were instituted mainly to supply the needs of the artisans and small shopkeepers in towns rather than of the rural population. On the other hand, the agricultural credit associations, which, as regards their peculiar characteristics, were first instituted by the late Bürgermeister Raiffeisen in Neuwied, have already attained a considerable extension throughout the whole of rural Germany, and are continually gaining additions and support. Some of them are affiliated to the Central Agricultural Credit Association in Neuwied, but there are numbers of independent organisations in Baden, Hesse, Bavaria, Wurtemberg, Westphalia, Hanover, Silesia, East Prussia, and the province of Saxony.

Briefly, the characteristic features of the Raiffeisen agricultural credit associations, as opposed to the Schultze-Delitzsch institutions, are that they are constituted on the principle of unlimited liability, they have practically no share capital, and pay no dividends, and they grant loans for long periods on personal security at a low rate of interest.

For an illustration of the operations of these associations, reference may be made to the accounts of the transactions of 463 of the credit societies included in the General Union of German Agricultural Co-operative Societies. From these accounts, it appears that the total turnover of the 463 associations amounted in 1893 to 4,385,000*l.*, or an average of 9,900*l.* for each society. Their working capital amounted to 2,420,000*l.*, or an average of 5,200*l.* for each society, while their total reserve funds were returned as amounting in the aggregate to 65,000*l.*

The agricultural co-operative-purchase societies, of which there are 894, are associations formed for the purchase of manures, feeding stuffs, seeds, and implements. Their function is to obtain goods at a cheap rate by purchasing large quantities, and to secure the best quality by agreement and proper control. As a rule, their operations are conducted on lines similar to those which have been so successful in the case of the French agricultural co-operative societies, of which a detailed account was published by the Board of Agriculture in 1894.\* By regulating prices and preventing fraud, the associations of this class exercise an influence far beyond the limits of their own membership, and they have enabled agriculturists generally to obtain better terms from manufacturers of farming requisites.

The published accounts of 422 of these societies show that in 1893 their purchases were of the value of 780,000*l.* Their trading capital amounted to 210,000*l.*, and their net profits on the year's operations represented an average of 34*l.* for each society. The business on behalf of the individual societies is generally done through the central unions, and it has been estimated that the transactions of all the societies in Germany represented purchases to the value of at least 1,700,000*l.* in 1893.

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\* Journal of the Board of Agriculture, Vol. I, No. 1, p. 7.



One of the most prosperous of these co-operative-purchase societies is the Central Association for the purchase of agricultural machines and implements at Halle-on-Saale, which was formed for the benefit of all the members of the Central Union of the Province of Saxony. Its annual business transactions amount to about 35,000*l*. This society not only purchases and consigns goods, but also tests them, and undertakes the repair of broken machinery.

Various efforts have been made in Germany to apply co-operative principles to production in agriculture, but hitherto little progress has been made in this direction except in the case of dairying, in which industry co-operation has undoubtedly been a great success. A full account of the development and organisation of the co-operative dairies in various parts of Germany was given in a report published by the Board of Agriculture in 1892.\* At that time the number of these establishments was 1,020, but this has since increased to 1,262. The co-operative dairy societies may be divided into three classes, viz., dairies which manufacture butter and skim-milk cheeses, and thus utilise the skim milk: dairies in which only the cream is used, the skim milk and buttermilk being returned to the members; and dairy stores, in which fresh milk is sold on behalf of the members of the society, and only the surplus milk is converted into butter and cheese. Dairies of the second class are the most popular establishments, as the skim-milk and buttermilk can generally be more profitably used for rearing calves and fattening pigs than by its conversion into cheese. The dairy stores are chiefly confined to the neighbourhood of large centres of population, where there is a demand for milk.

Taking the accounts for 1892 of 288 of these co-operative dairy societies, it appears that the average number of members in each society was 44, the smallest number being returned by an association in the Palatinate with 10 members, and the largest by a society in Wurtemberg with 90 members. The average quantity of milk manipulated in the year at each establishment was 210,000 gallons. The average working capital of each dairy was 2,550*l*., and the average reserve fund was 189*l*.. The average net profits of 70 of the dairies on the year's operations amounted to 168*l*., and 14 associations returned an average loss of 60*l*..

In Germany there are comparatively few co-operative societies for the sale of agricultural produce, and the efforts hitherto made to apply co-operation to the machinery of distribution have not been altogether encouraging. For example, the associations for the co-operative sale of live and dead meat have been involved in difficulties in almost all cases, and many of them have been compelled to liquidate, partly because they failed to obtain the support of the public, and partly because of the difficulty of

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\* Report on Dairy Farming in Denmark, Germany, and Sweden. C. 7019.

finding reliable and capable agents. In many cases, also, it was found that the members sold good cattle to the dealers, while they consigned inferior stock to the societies.

The co-operative sale of butter through the parcel post has recently been carried on with some success by individual central co-operative societies and also by unions of co-operative dairies. Co-operation in the sale of field produce has also worked satisfactorily in certain districts, and it is expected that this will extend in the future in view of the low prices of corn. For the sale of fruit and vegetables there are various co-operative societies, especially in Southern Germany, and their numbers are yearly increasing.

In addition to the various forms of co-operation already mentioned, there are a few co-operative distilleries which are not at present in a very flourishing condition, owing to the depressed state of the trade in spirits. Co-operative mills and bakehouses exist in two or three districts. There are also about a dozen starch factories and some 30 sugar refineries run by associations working on a co-operative basis.

In conclusion, it may be observed that there are certain other associations in Germany, which may in some respects be regarded as based upon co-operative principles, such as the forestry and land improvement societies, and some of the colonies or settlements established in Posen and West Prussia. But as these organisations are for the most part supported from the public funds and are subjected to the supervision of the State, or of the provincial authorities, they do not come within the category of co-operative associations such as have been described above. The drainage and irrigation societies of the north may be mentioned in this connection. The removal of water by drainage has frequently been carried out by associations of this class.

The settlements or colonies, to which reference has been made, are the outcome of the efforts made by the Prussian Government since 1886, to establish colonies both of labourers and of small proprietors throughout the eastern provinces. In 1886, the growing scarcity of labour and the alarming increase of Polish immigration led to the passing of a law for the promotion of German settlements in West Prussia and Posen.

By this law the State devoted the sum of 5,000,000*l.* to the buying of land for establishing settlements of German labourers and small proprietors and thus strengthening the Teutonic element in the provinces peculiarly liable to the invasion of the Slavs. A Commission was appointed and empowered to purchase suitable land, to select colonists from south and west Germany, to mark out the land into suitable divisions, to determine the proper relations of the new colony to the communal and provincial authorities, and to give such moderate aid to the colonists as should be required to establish them in their new life. Crown lands were to be used where possible, but private lands suitable for the purpose might be acquired. These lands were to be

divided into holdings of varying size, suitable either for small farmers' or for labourers' allotments. The separate holdings might be transferred to the colonists for their capital value or they might be leased for short periods. The income which the Government would thus derive is to be allowed to accumulate until 1907 to form a fund for colonisation purposes ; afterwards it will simply form part of the ordinary revenue.

In some cases an association of colonists purchase an estate, and assign to each a portion for his individual cultivation. The unassigned land is cultivated in common. When the shares are fully paid up, the holders become proprietors of the land allotted to them.

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## THE DAIRY TRADE OF SWEDEN AND NORWAY.

One of the features of the British import trade in dairy produce has been the steady growth of the receipts of butter from Swedish and Norwegian ports, a development which has been particularly marked during the past decade. Ten years ago the annual imports of butter from Sweden did not exceed 149,000 cwts. In the interval, however, the consignments received from that country have increased from year to year, with the exception of a slight check in 1892, and in 1895 they amounted to 310,809 cwts. The imports of Norwegian butter have also doubled during the same period, but the trade is as yet of very small proportions, the annual receipts having only once exceeded 20,000 cwts. during the last 10 years.

In 1886, Norway was responsible for 7,186 cwts. of the butter imported into the United Kingdom, while in 1895 she was credited with 15,155 cwts. During the first five years of the decade, the Norwegian consignments entered at British ports declined from 7,186 cwts. in 1881 to 4,200 cwts. in 1890; in the following three years they amounted to 6,800 cwts., 9,400 cwts., and 22,150 cwts. respectively; in 1894 they were 15,700 cwts., and 15,155 cwts. in 1895.

On reference to the trade statistics of Sweden, it will be found that the bulk of the butter exported from that country is shipped to Great Britain. Taking the figures of each of the past three years, it appears that the total quantity of butter exported from Swedish ports in 1893 was 396,000 cwts.; in 1894, 438,000 cwts.; and in 1895, 469,000 cwts. In the same years, the shipments of Swedish butter to British ports amounted to 267,000 cwts., 266,000 cwts., and 311,000 cwts. respectively. The difference between these figures and the total exports represents a balance of about 150,000 cwts. annually, nearly all of which is exported to Denmark, and subsequently re-exported to the United Kingdom, so that the amount of Swedish butter actually received in this country is much greater than the quantities entered as imported from Sweden. Thus, according to a report recently issued by the Agricultural Department at Stockholm,\* the total consignments of Swedish butter received at British ports last year amounted to between 440,000 and 450,000 cwts., or about 130,000 cwts. in excess of the quantity returned as of Swedish origin in the import statistics of this country.

In Sweden there are over 1,500 dairies, of which by far the larger number are fitted with modern appliances for the separation of cream from milk. According to a statement prepared by the State dairy instructor, and published in 1894, the

\* Årsberättelse till Kongl. Landtbruksstyrelsen från Mejeriagenturen i Manchester ör år 1895.

mechanical separator was then in use in 900 dairies, while in 526 the cream was separated by the use of ice, on what is known as the Swartz process. Co-operative principles have not made much progress among Swedish agriculturists, consequently the number of dairies owned by associations of dairy farmers form a comparatively small proportion of the total number of such establishments. Of the 1,500 dairies enumerated in the report referred to above, over 800 were described as estate dairies, while 610 were "buying up" dairies or establishments run by individuals or companies purchasing milk from the farmers.

In the south-west of Sweden, co-operative dairies are said to have been very successful, but it is believed that they are not likely to increase in number or importance in other districts, as they are unable to compete with the estate dairies in respect of good management and excellence of produce.

The native Swedish cattle are small, but the dairy herds have been largely improved by crossing with English, Scotch, and Dutch breeds, chiefly Ayrshires and East Frisians. During the greater part of the year the animals have to be stall-fed owing to the severity of the climate. The total number of cows in Sweden, according to the latest official estimates, is 1,683,116.

Although the imports of Norwegian butter into the United Kingdom during the past five years would appear to indicate the possibility of a further extension of this trade, it must not be forgotten that the production of butter in Norway is not yet sufficient to meet the home requirements. It is evident, however, from the decline in the quantities of butter imported into that kingdom and from the increase in the exports, that the Norwegian dairy industry has made great strides in recent years. The imports and exports of butter in the five years 1890-94 were as follows:—

Butter.	1890.	1891.	1892.	1893.	1894.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Imports - - -	48,145	32,056	24,469	16,045	18,348
Exports :					
Norwegian produce -	4,147	6,851	9,588	12,830	15,175
Produce of other countries -	1,770	331	242	1,297	198
Total exports -	5,917	7,182	9,830	14,127	15,373

In Norway there are about 350 dairies and cheese factories, exclusive of a number of small dairies in which hand separators are used. Many of the large establishments manufacture butter only, and return the skim milk and butter-milk to the farmers supplying the milk. This system has been found profitable in most districts, as these bye-products are used for feeding swine and calves. In a number of the dairies the cream is separated from the milk by the Swartz process.

The number of cows in Norway in 1890, the latest year for which estimates are available, was 705,188.

One of the difficulties which has hitherto attended dairy-farming in Norway appears to have been the want of a sufficient supply of cheap home-grown fodder.

Both in Sweden and Norway much attention is given to dairy education, and in each country there are a number of dairy experts who travel about the rural districts giving practical demonstrations in dairy work, and affording advice to parties desiring it. In Sweden these advisers are, as a rule, employed by the provincial authorities or by local societies, while in Norway there are four officers of this class and six assistants appointed by the Storting.

Among the teaching institutions in Sweden receiving support from the Government are two dairy schools in the north, and eighteen model dairy stations for the training of dairymaids. In Norway there were, in 1894, seven dairy schools and two cheese schools supported by public funds, while two milk control stations have recently been opened with the aid of the State.

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## CATTLE-RAISING IN RUSSIA.

The prominent position now occupied by Russia among the wheat-exporting countries of the world has aroused some interest in the system of farming pursued in that country, especially with regard to the rearing of cattle and sheep and the prospective development of an export trade in beef and mutton. In the opinion of some authorities, the natural conditions prevailing over a large area of Russia in Europe are such as to afford a great opening for the production of cattle suitable for export. That so little progress has as yet been made in this direction has been attributed to the fact that the cultivation of fodder grasses is almost entirely neglected, and that cattle breeding is subsidiary to agriculture in most of the southern governments of the Empire owing to the increasing demand for wheat. Moreover, the ravages of cattle plague have, until recent years, not only discouraged farmers from turning their attention to stock raising, but also closed the markets of Western Europe to Russian cattle. But a review of the trade statistics of the past quarter of a century would show that the exports of cattle from Russian ports have never assumed very considerable proportions, and that for the last few years they have exhibited a tendency to decline. The number exported in a single year has only exceeded 50,000 on five occasions since 1852. In the following table the average annual exports of cattle are shown for periods of five years since 1869-73:—

Year.					Exports.
					No.
1869-73	-	-	-	-	83,000
1874-78	-	-	-	-	46,000
1879-83	-	-	-	-	29,000
1884-88	-	-	-	-	34,000
1889-93	-	-	-	-	19,000

The greater number of these beasts are sent to Turkey and Greece, while the Asiatic Khanates, China and Persia, also occasionally receive large consignments. The exports of fresh and salted beef are not distinguished in the trade returns, but it is believed that they are insignificant.

The imports of live cattle into Russia have not been separately shown in the official trade returns in recent years, but in the three years 1887-1889 the average number of cattle imported annually was about 10,000 head.

From the foregoing statement it will be seen that, at least so far as beef is concerned, Russia cannot be regarded as a serious competitor in the meat markets outside her own borders. It

must not, however, be supposed that cattle-raising is entirely neglected. According to the official estimates for 1888, the number of cattle of all kinds in European Russia, exclusive of Poland and Finland, was 24,609,000, while in 1856 it was 21,351,000. Nearly the whole of the increase shown by a comparison of these estimates took place between 1876 and 1888, the estimate for the latter year having been 2,800,000 in excess of the 21,857,000 head returned in 1876. From an official statement published in 1893, it is possible to add to the figures of 1888 the estimated number of cattle in Poland, Finland, Siberia, and the Khirghiz Steppes, amounting to over 8,200,000 head, which brings up the total for the Empire to 32,880,000.

Taking the numbers of cattle relatively to the density of the population of the various provinces, the first place belongs to the district of the Don, which is followed by the governments of Astrakhan, Bessarabia, and Esthonia, whilst the smaller ratios are found in the north-western governments and in Little Russia. In general, it may be said that the frontier governments of the Empire are richer in cattle than the central.

A writer in the *Tidskrift for Landökonomi* gives the ratio of cattle to the population of European Russia, exclusive of Finland and Poland, as 33·4 to every 100 inhabitants. The only countries in which the ratio is lower, according to the same authority, are England, France, Belgium, Greece, Spain, and Italy, while in the remaining countries of Europe the proportion of horned stock to the population exceeds that of Russia. But while the number of cattle in the latter country is not great relatively to the population and area, it is to be observed that the consumption of meat in Russia is also small compared with that of most other countries. The peasants are practically vegetarians. Among the inhabitants of the villages and the poorer classes of the towns, meat is a luxury enjoyed only on fête days and ceremonious occasions. Their principal diet consists of vegetable food, chiefly bread, gherkins, and cabbages, the latter being salted and pickled for use in winter, while potatoes are also a popular article of food. It appears that a further element affecting the consumption of meat is the fact that the peasant, as a rule, strictly observes the numerous fast days which are imposed upon every orthodox member of the Greek Church. It has been urged also in this connection that some allowance must be made for habit; the peasant is accustomed to vegetable food, as were his forefathers before him, and he does not readily take to a meat diet.

In the northern and central governments the peasant keeps cattle mainly for the purpose of fertilizing the soil, the oxen are rarely used for draught purposes, and in the case of cows, the milk is largely regarded as a by-product, which is generally consumed by the family of the owner, except in cases where the holding is situated in the neighbourhood of a large town. Little care is,

therefore, paid to this class of stock, and in the winter the beasts receive, as a rule, a very scanty supply of fodder, chiefly straw, as the small stock of hay is usually kept for the horses.

In the southern and south-eastern steppe regions, on the other hand, and particularly in the Caucasus, the conditions are such as to favour cattle raising. The steppes afford a more nutritive fodder than is to be found in the rough grazing lands of the north, while in many districts there are immense areas of grass land devoted entirely to pasturage, and abundant supplies of hay and straw for winter-keep are available.

In the western districts, in the governments of the Baltic and Vistula, and partly in the south-western governments, stock raising is said to form a profitable branch of industry. It appears that in these regions the best breeds of milch cows are raised, the feeding is systematic and rational, and the methods of stock-raising generally approach nearer to those practised in Western Europe.

The classes of cattle bred in Russia vary greatly in size and productiveness. In most of the northern and central governments the animals belong to what is known as the native Russian breed, and are distinguished by their small size, narrow chests, big heads, tapering hind-quarters, and small dewlaps. The cows are said to have well-developed udders, and to yield considerable quantities of milk when well fed. As producers of beef, beasts of this race are naturally of little value. Apparently very few attempts have as yet been made to improve this breed, owing to the bad conditions in which the animals live, and it is maintained that the introduction of fresh blood produces no good results, probably because such efforts are not attended with improved methods of feeding and rearing.

In the governments of the south and south-west (particularly in Bessarabia, Podolia, Kiev, Tchernigov, Poltava, Tcharkov, Kherson, Ekaterinoslav, and the greater part of the Taurida) the grey Ukraine cattle are found, while in the south-eastern districts, on the right bank of the Volga, the popular breed is the red Kalmuck. The former have for centuries been used as draught animals not only in agriculture, but, before the introduction of railways, also for the conveyance of produce over long distances to and from the ports. Ukraine cattle are big beasts with well-developed shoulders and strong muscular legs. The live-weight of the oxen is ordinarily about 1,200 lbs. each, but when well fattened they weigh about 1,800 lbs., and yield, according to the statistics of the St. Petersburg abattoirs, about 1,400 lbs. of meat, hide, and tallow. The so-called Kuban cattle are a branch of this race. Kalmuck cattle come to maturity earlier than the Ukraine, and produce a superior quality of meat. Their live-weight when fattened is stated to be about 1,450 lbs., and the dead-weight, including the hide and tallow, about 1,200 lbs.



In the districts on the left bank of the Volga in the Ural territory, and in the government of Orenburg, as well as in the steppe region of Central Asia, the most popular breed of cattle is known as the Khirghiz race. The animals are of medium size, and their meat is of good quality. Their average live-weight is estimated at about 1,260 lbs., and their dead-weight, including hide and tallow, at about 1,000 lbs.

The cows of the three principal breeds of cattle found in the southern and south-western governments are said to be poor milkers.

In 1894, the total area of grass under rotation and of meadows and permanent pastures in European Russia, exclusive of Poland, was 68 million acres and the estimated production of hay was 693 million cwts.

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## BEET-SUGAR INDUSTRY ON THE CONTINENT.

## II.

A recent number of this Journal\* contained some notes dealing with the cultivation of sugar-beet for the manufacture of sugar in Russia, France, Germany, and Austria-Hungary, and the following brief review of the economic features of sugar-beet farming in Holland, Belgium, and Denmark may be of interest, inasmuch as it will serve to complete the information already published relating to the progress of the beet-sugar industry on the Continent.

According to the official statistics issued by the Dutch Government, the acreage devoted to the cultivation of sugar-beet in Holland in each of the ten years ending with 1893 has been as follows :—

Year.	Acres.	Year.	Acres.
1884	52,865	1889	58,262
1885	41,614	1890	69,407
1886	45,036	1891	55,652
1887	47,263	1892	60,718
1888	54,155	1893	70,096

The number of sugar factories in operation in 1894 was 30, and there has been no increase in the number of these establishments since 1886. The production of raw sugar from the home-grown beet has, with a few fluctuations, steadily increased, owing not only to the extension of the area under the crop, but also to improved methods of extraction. In the three years 1886-89 the average annual outturn, excluding molasses, amounted to 642,000 cwts.; in 1889-90 it was estimated at 1,038,184 cwts.; while in the following year it was 1,140,386 cwts. In 1891-92 the produce of raw sugar fell to 687,500 cwts., owing largely to a contraction of the area under the crop in 1891, but a recovery took place in the next year when the outturn was 1,012,943 cwts., and in 1893-4 the factories produced nearly 1,115,900 cwts. of raw sugar, not including molasses.

In the Netherlands the excise duty on native raw sugar is calculated on the assumption of an estimated yield of 3.086 lbs., or 3.20 lbs. (according to the date of defecation) of refined sugar per hectolitre (22 Imperial gallons) of beet-root juice, per degree of density, and is fixed at 22s. 10d. per cwt. This is also the amount of the drawback allowed on exports of refined sugar. There is also a supplementary duty of  $5\frac{1}{2}$  or 9 per cent. according to the process of extraction employed. The estimated yield of refined sugar from a given quantity of beet juice was fixed in 1867, but in consequence of the improved methods of extraction

adopted in recent years, the manufacturers are enabled to produce considerably more sugar than the amount on which excise is paid, and it is this excess which acts as a bounty on the export of sugar. The excess yield which escapes duty has been estimated to have averaged 22 per cent. during the last few years.

The extent of the Dutch trade in sugar may be gathered from the following statement of the imports and exports of the last ten years :—

Year.	Imports.			Exports.		
	Raw Beet-root and Cane Sugar.	Refined Beetroot and Cane Sugar (including Bastard Sugar).	Total.	Raw Beet-root and Cane Sugar.	Refined Beetroot and Cane Sugar (including Bastard Sugar).	Total.
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
1884 - - -	2,427,582	79,004	2,506,586	299,318	1,808,145	2,107,463
1885 - - -	2,180,250	91,320	2,271,579	184,096	1,587,241	1,772,237
1886 - - -	1,709,223	131,568	1,840,791	143,550	1,480,521	1,624,071
1887 - - -	1,964,345	114,734	2,079,079	151,132	1,743,559	1,894,691
1888 - - -	1,942,993	126,814	2,069,807	148,893	1,684,336	1,833,229
1889 - - -	1,777,993	178,887	1,956,880	189,377	1,616,312	1,805,689
1890 - - -	2,180,986	168,791	2,349,777	164,980	2,097,877	2,262,857
1891 - - -	1,810,757	172,425	1,983,182	150,602	2,058,925	2,209,527
1892 - - -	2,277,943	166,120	2,444,063	83,502	2,310,295	2,393,797
1893 - - -	1,968,116	177,002	2,145,118	135,418	2,073,618	2,209,036

The latest official statistics of the acreage of sugar-beet in Belgium are those for 1880, when the area under the crop was 80,589 acres. There can be little doubt, however, that a considerable increase has taken place since that year. According to an estimate presented by M. Dureau to the *Société Nationale d'Agriculture* of France, there were 141,000 acres sown with sugar-beet in Belgium in 1895.

In Belgium the manufacture of sugar made from sugar-beet is a business of considerable proportions, as may be seen from the table given below, which shows the number of factories in operation and the quantity of raw sugar produced in the five years ending with 1893 :—

Year.	Number of Manu-factories at work.	Number of Refineries.	Quantity of Raw Sugar produced.	Quantity of Raw Sugar used in the Refineries.
			Cwts.	Cwts.
1889 -	116	32	3,551,350	774,500
1890 -	119	30	3,211,843	809,200
1891 -	120	30	2,947,293	834,800
1892 -	122	36	2,776,950	954,200
1893 -	121	35	3,738,271	999,300

The following table shows the estimated production and consumption of refined sugar and syrup in Belgium, together with the imports and exports of refined sugar, in the 10 years 1884-93:—

Year.	Refined Sugar and Syrup produced.	Quantities of Refined Sugar imported for Home Consumption.	Quantities of Refined Sugar exported (Domestic Produce).	Consumption of Refined Sugar and Syrup.
	Cwts.	Cwts.	Cwts.	Cwts.
1884 - -	358,000	126,600	182,400	302,200
1885 - -	432,600	54,000	172,100	314,500
1886 - -	266,900	20,400	204,100	83,200
1887 - -	458,300	12,800	328,700	142,400
1888 - -	727,700	8,000	386,800	348,900
1889 - -	751,300	7,900	443,100	316,100
1890 - -	784,900	7,700	430,000	362,600
1891 - -	809,800	8,100	484,700	333,200
1892 - -	925,600	21,000	588,300	358,300
1893 - -	969,300	16,300	749,800	235,800

It appears that in proportion to the population of the country, the Belgian production of beet-root sugar exceeds that of any other State in Europe.

The excise imposed by the Belgian Government on the sugar of home production amounts to 18s. 3d. per cwt. of second class raw sugar (Nos. 10 to 15), the ordinary grade. It is levied on the assumption that 3½ lbs. of raw sugar are produced from 1 hectolitre (22 gallons) of beetroot juice at 1° density. This method of assessment, which closely resembles that of the Netherlands, permits the manufacturer to produce a certain amount of sugar duty free. It has been estimated that the surplus upon which no duty is paid amounts to as much as 20 per cent. of the total production.

The drawback which is allowed on sugar exported is of the same amount as the excise, viz., 18s. 3d. per cwt.

In Denmark, there are only six beet-sugar factories, and the production of sugar is not sufficient to meet the home requirements. In the four years 1884-88, the average annual outturn of raw sugar from the Danish factories was 33,188,000 lbs., and the net imports of sugar in the same period amounted on the average to 26,700,000 lbs. annually, while in 1889-92 the estimated annual production of raw sugar was 42,884,000 lbs., and the imports amounted annually to 41,500,000 lbs. In 1893, the home production of sugar was 54,000,000 lbs., and in 1894 it had increased to 75,000,000 lbs.

The development which has taken place in recent years in the Danish beet-sugar industry has been limited in extent. Prior to 1891 the home production was practically unprotected, inasmuch as the Customs duty on the imported sugar and the excise on native grown beet-sugar were equal in amount. In 1891, however, these taxes were readjusted, the Customs duty being



fixed at 3s. 5*d.* per cwt. on raw sugar, and 6s. 9*d.* per cwt. on refined sugar, while the excise duties were reduced to 2s. 7*d.* and 2s. 11*d.* per cwt. respectively.

The protection thus afforded to home producers is stated by Danish authorities to have been the means of saving the industry at a critical period of its existence, and to have enabled the manufacturers of beet-sugar to consolidate and even to extend their business in the face of keen competition with the sugar of other countries.

In considering the position of the beet-sugar industry in Denmark, there is one point which should not be overlooked, and that is the economic basis upon which the industry is organised. The refiners, the manufacturers of raw sugar, and the cultivators of beet have, with few exceptions, combined for the maintenance of their common interests. One of the largest sugar factories, Nykjöbing factory, is now run on co-operative principles by the beet-growers. But while the progress made hitherto may be partly attributed to that faculty for industrial association which is so characteristic of the Danes, it is worthy of notice that the development, so far as the raw sugar factories are concerned, has been intensive rather than extensive. There has been no increase in the number of these establishments since 1885, but the out-turn of raw sugar has been considerably augmented, owing largely to the introduction of improved processes of manufacture which enable a greater quantity of saccharine matter to be extracted from a given quantity of beet.

The climate of Denmark is considered to be less favourable for the cultivation of sugar-beet than that of France and Central Germany, and it is believed that the industry, which continues to be limited in extent, does not yield much profit.

In Sweden the manufacture of beet sugar has made rapid strides in the past five years, but the industry is small compared with that of the countries already mentioned. The number of factories operating in 1893-94 was ten, and the quantity of beet consumed in these establishments in the year amounted to 374,000 tons, from which 43,000 tons of raw sugar were produced. Five years earlier, in 1889-90, there were only four factories in existence and the total output of raw sugar was 14,600 tons.

With the development of the native industry there has been a diminution in the imports of sugar, but this decline by no means corresponds with the increase in the home production, owing largely to the fact that the consumption of sugar in the country is steadily increasing. The net imports of sugar of all kinds computed as raw sugar into Sweden in 1893 amounted to 31,920 tons, as compared with 40,759 tons in 1889, and 42,232 tons in 1890.

The Swedish excise duty on raw sugar is 6s. 6½*d.* per cwt., and is charged on the assumption that 100 lbs. of beet will produce 7½ lbs. of raw sugar. The customs duty on ordinary unrefined raw sugar is just double the excise, or 13s. 3*d.* per cwt.

Reviewing the condition of the Swedish beet-sugar industry in 1894, Mr. Duff writes:—

“The work within the sugar industry has this year, as well as during previous years, been divided into two large sections, namely, the manufacture of raw sugar, combined with beet cultivation, and the refining of the raw sugar. The cultivation of the beet has, in consequence of the good economic result it leaves, especially with the present low prices of grain, increased enormously. The supply of beet at the beginning of the year was so large that the factories could only with difficulty work up the raw material. In consequence of the anticipated over-production one company has been dissolved, and another will probably take the same wise step. At the beginning of the year the prices of raw sugar were very remunerative, leaving the factories a good profit, but in consequence of the subsequent over-production the prices fell much lower than they have ever been before.”

“There is very little prospect of the factories making any profit this year; several of them will probably make a loss instead. . . . All the factories are, from a technical point of view, well constructed.”

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## INDIAN TRADE IN AGRICULTURAL PRODUCE.

The recently issued statement of the trade of British India for the year 1894-95 contains much interesting information relating to the agricultural products of the Indian Empire. Tables relating to the foreign sea-borne trade of British India are appended to this publication, together with a "Review of the Trade of India," by Mr. J. E. O'Connor, C.I.E., Director General of Statistics to the Government of India.

It is stated in an introductory note to the volume that all values are given therein as "tens of rupees," a denomination which, while not subject to the charge of inaccuracy attaching to that of "£ sterling," calculated at the nominal exchange of 2s. to the rupee, nevertheless enables comparisons to be made with the figures in any past volumes in which that expression of values was employed. The sign Rx. is used to signify tens of rupees.

The imports of the principal articles of agricultural produce enumerated under the heading of "provisions" during three years 1892 to 1895 are given as follows:—

Article.				1892-93.	1893-94.	1894-95.
				Lbs.	Lbs.	Lbs.
Bacon and hams	-	-	-	793,095	954,854	969,927
Cheese	-	-	-	790,231	826,943	906,968
Butter	-	-	-	315,278	289,348	301,997
Flour	-	-	-	1,316,581	1,396,291	1,249,692

There is also a large importation of unenumerated goods which it is practically impossible to specify. These are mainly canned fish and meats, preserves, jams and jellies, biscuits, condiments, and the innumerable "tinned stores," as they are called, which play an important part in Anglo-Indian households. The value of these goods in 1894-5 amounted to Rx. 655,765.

Australia began to make a little show in 1894-5 in the list of countries whence provisions are imported into India, and this development is attributed to the work of the two Commissioners sent to India from Victoria to push business.

The importation of wool into India by sea is relatively small. Last year the quantity was a little less than half a million pounds valued at Rx. 132,419. Most of the foreign wool imported is received overland from the countries across the Western and Northern frontiers, and much of it is re-exported. The imports by sea are also largely re-exported, and only a small portion—that which is received from Australia—is consumed in local manufacture; these imports have amounted to



59,000 lbs. and 49,000 lbs. in each of the last two years. The woollen factories of India are still, however, only in their infancy as regards the weaving of the better classes of fabrics.

The quantity of sugar imported into India in 1894-95 amounted to 2,491,000 cwts., as compared with an average annual importation of about 2,000,000 cwts. in the previous three years. Mauritius was credited with 70 per cent. of the sugar imported last year, and it is interesting to note that Germany ranked next among the countries contributing to the supply of this article. It is observed, however, that the continental countries make no headway in the competition between their beet sugars and the cane sugars of Mauritius, China, the Straits, and Java, which continue to furnish India with the bulk of the sugar she requires from foreign countries. The imports from the United Kingdom have undergone such rapid restriction that the trade would seem to have approached complete extinction.

The imports of tea in 1894-95 were smaller than those of the previous year, the quantity having been 6,326,000 lbs. as compared with 7,688,000 lbs. The sources of supply were China, Ceylon, the Straits, and Java. Ceylon tea is consumed in India, but the bulk of the other imported tea is re-exported, chiefly to Persia and Afghanistan.

The following table shows the values of certain Indian products which were exported during the period from 1890 to 1895 :—

Article.	1890-91.	1891-92.	1892-93.	1893-94.	1894-95.
	Rx.	Rx.	Rx.	Rx.	Rx.
Grain and pulse -	19,539,228	28,695,680	20,562,972	16,325,142	17,056,850
Seeds -	9,343,252	12,208,458	11,631,015	17,753,251	14,201,520
Hides and skins -	4,695,919	5,186,002	5,591,935	5,801,328	6,559,940
Wool, raw -	968,322	1,013,864	1,116,578	1,079,772	1,376,850
Provisions -	633,377	776,531	775,802	873,877	853,155
Wood and timber -	557,884	609,463	695,259	589,764	661,824
Sugar -	417,562	508,417	507,914	892,741	550,583
Jute, raw -	7,602,010	6,848,493	7,944,223	8,524,130	10,575,977
Opium -	9,261,814	9,562,261	9,255,014	8,019,428	9,064,665
Cotton, raw -	16,502,775	10,754,312	12,743,679	13,296,670	8,703,356
Tea -	5,219,233	5,968,129	6,292,348	6,585,835	7,555,745
Indigo -	3,073,125	3,214,076	4,141,179	4,182,128	4,745,915
Coffee -	1,454,985	1,998,659	2,066,862	2,002,171	2,122,373

The greatest part of the decline in the export of seeds was due to the restriction within normal limits of the trade in rapeseed, for which a most exceptional demand had existed in the preceding year owing to the failure of the European colza harvest. The decline in the export of sugar also followed an unusually large export in 1893-94, which was due to speculative transactions.

On the whole, considering that there was a decline in only two articles of the first importance; that in one of these the

decline was mainly a return to normal limits after an abnormal year; that the same remark may be made of another of the five articles in which a decrease is shown; that in provisions the trade is relatively unimportant and the decline was small; and that Indian trade has had to contend with the existence of deep depression in Europe, America, and the Australian Colonies, as well as a continuous fall throughout 1894 in the prices of almost all commodities; Mr. O'Connor thinks that it is not too much to suggest that the results may be regarded without dissatisfaction.

The following table is given in the Report to show the exports of wheat from India since 1881 :—

Year.	Total Exports.		Total Value.
	Cwts.	Rx.	
1881-82 - - -	19,863,520	8,604,081	
1882-83 - - -	14,144,407	6,068,934	
1883-84 - - -	20,956,495	8,877,561	
1884-85 - - -	15,830,754	8,309,140	
1885-86 - - -	21,060,519	8,002,350	
1886-87 - - -	22,263,320	8,625,864	
1887-88 - - -	13,538,169	5,562,373	
1888-89 - - -	17,610,081	7,522,676	
1889-90 - - -	13,799,224	5,791,377	
1890-91 - - -	14,320,496	6,042,426	
1891-92 - - -	30,303,425	14,380,462	
1892-93 - - -	14,973,453	7,440,383	
1893-94 - - -	12,156,551	5,193,885	
1894-95 - - -	6,887,791	2,565,271	

This table is intended to show the inaccuracy of the general idea that the Indian wheat trade has expanded enormously since its first commencement. The fact is that the commencement of the trade dates practically from the first year of the series in the table; and it will be seen that though the trade has been subject to great vicissitudes and has oscillated violently, the highest level attained in any year has been but little in excess of the level of 1881-82, while it has frequently been far below that level. There is one striking exception in the year 1891-92, an entirely abnormal year when the Russian wheat and rye crops failed, while the harvests generally in Continental Europe were extremely bad, and there was for some months a wild speculation in wheat with an extraordinary rise in prices. Leaving this year out of account, it will be observed from the table that during the series of 13 years the quantity of wheat exported annually only exceeded the quantity exported in 1881-82 on three occasions, while in nine years out of the 13 it was much below that level.

In this connection Mr. O'Connor says, "Since 1891-92 there has been a progressive decline in the exports in consequence of poor to average harvests in parts of India which raised prices to a point that made shipment unprofitable, while on the

other hand, with unusually abundant harvests of wheat, the United States presented such plenteous supplies to the world as to send prices down to what might be thought the lowest possible level if one did not constantly see that there were still lower depths of prices at which wheat would be grown and sold. The Argentine Republic, too, has rapidly come to the front as an exporter of wheat, 1,608,000 tons having been shipped from that country in 1894. In the presence of such conditions the Indian export trade last year (1894-95) seemed to be approaching the vanishing point. But abundant supplies and unprofitable prices do not permanently prevail in the wheat market more than in any other market. Since the close of the year there has been renewed activity in the trade."

The exports of wheat from Calcutta fell so heavily that the trade was quite insignificant. That there will be a material recovery from this great fall is said to be certain, but it is held to be equally certain that Calcutta will never again take such a prominent position in the shipment of wheat as in the early days of the trade. The great sources of the supply of wheat for export lie in the fields of North-Western and Central India, and the greatest part of the grain, so far as it is intended for export, must find its way to Karáchi and Bombay. In 1894-95 quite five-sixths of the whole trade was done at Karáchi.

The principal destinations of Indian wheat in the last four years were as follows:—

Countries.	1891-92.	1892-93.	1893-94.	1894-95.
	Thousands of Cwts.	Thousands of Cwts.	Thousands of Cwts.	Thousands of Cwts.
To the United Kingdom	12,345	7,413	6,093	4,768
„ France	6,024	1,724	1,913	525
„ Egypt	4,858	2,045	1,687	440
„ Belgium	4,655	1,226	1,452	594
„ Italy	1,062	689	409	3
„ Germany	663	902	38	216
„ Holland	523	386	356	242

The quantity shipped to these countries amounted to 98 per cent. of the whole exports of the year. Less than half of the exports of Indian rice is consumed in Europe, but the case is different with Indian wheat, of which only a trifling fraction is consumed elsewhere than in Europe, mainly in the United Kingdom. The large amount of wheat which was apparently sent to Egypt does not represent actual trade with that country, the grain only going to Port Said for orders.

With the decline in the exports of wheat the trade in wheat-flour also declined, but in this article the fall was comparatively slight, and the trade may be regarded as having reached a satisfactory stage of progress, though there is reported to be a prospect of much greater development. The exports of



wheat-flour from India in each of the last eight years are shown below :—

Year.			Lbs.	Year.			Lbs.
1887-88	-	-	36,082,000	1891-92	-	-	61,028,000
1888-89	-	-	36,290,000	1892-93	-	-	57,940,000
1889-90	-	-	48,572,000	1893-94	-	-	68,446,000
1890-91	-	-	47,036,000	1894-95	-	-	65,916,000

The quantity exported to the United Kingdom increased from 421,000 lbs. in 1893-94 to 698,000 lbs. in 1894-95, and 335,000 lbs. were sent to Belgium in the latter year. These, it is suggested, are but the small beginnings of a large trade in the future with Europe. It is maintained that with cheap Indian labour it ought to be possible for India to compete not unsuccessfully with European and American millers. This is in the future, however; for the present the bulk of the trade is carried on with Mauritius, Aden, Arabia, Ceylon, the East African coast, and Egypt.

The trade in the millets was a little better than in 1893-94, but still below the average. The exports of pulse were very low, but during the last five years there has been a curious rise and fall in this trade in alternate years.

There was a very large increase in the exports of manures, viz., from 51,390 tons in 1893-94 to 79,728 tons in 1894-95, and if the trade should continue on and above this level it must be regarded as one of some considerable importance. The exports, however, consist mainly of animal bones, and it is possible to connect the large export of hides and skins in the year with the increase in bones. The exports are mainly to the United Kingdom, Germany, and Belgium.

Like animal bones, rice-bran must be regarded as a waste material in the present conditions of India. There is no demand for it there, but it is sought by other countries as a cattle food, and is now a not inconsiderable article of export. It is evolved in the Burma rice-mills in the husking and cleaning of rice, and the price obtained for it is of material assistance in augmenting the profits of the industry. The quantity available for export depends on the quantity of rice passing through the mills. The exports in 1894-95 exceeded 95,000 tons.

Though the exports of seeds during the year (20,887,000 cwts.) were much smaller than in 1893-94 (24,229,000 cwts.), which was a year of abnormal activity, the quantity shipped was larger than in any other year. In 1893-94 there was a quite extraordinary demand for rapeseed in consequence of an inferior colza crop in Europe, and the Indian rapeseed crop happened to have been unusually abundant, so that the demand was fully met. Last year the crop was not quite so good and the demand abated, but the exports were still unusually large. The value of

the exports of 1893-94 was as much as 44 per cent. in excess of that of the preceding year; in 1894-95 the value was 15 per cent. less than in 1893-94. For linseed the demand in England was inactive and prices excessively low, owing to the great abundance of all kinds of cattle food, and to the competition of Argentine linseed.

The export of wool during the seven previous years had fluctuated between 21 and nearly 25 million lbs. in weight. In 1894-95 the quantity exported amounted to 31,150,000 lbs., and these unusually large exports are ascribed to speculative business arising out of the conditions of exchange. It is said to be improbable that the speculations were very profitable, for prices kept moving downward throughout the year until they reached a very low point.

The exports of tanned hides and skins, mainly from Madras, exceeded 315,000 cwts. In both the larger hides and the smaller skins, chiefly goat and kid, there was a great increase in the trade, accompanying a similar increase in the export of raw hides and skins.

These skins are tanned in the Madras Presidency, and are exported thence and from Bombay to the United Kingdom, Belgium, France, the United States, and the Straits, the bulk of the exports being to the United Kingdom.

The exports of tea still continue to increase, the quantity shipped in 1894-95 having been 129,099,000 lbs. or nearly double the exports of 1885-86, when 68,784,000 lbs. were exported. The United Kingdom continues to be the great market for Indian tea, as much as 92 per cent. of the exports of last year having been shipped thither.

Owing partly to a small crop, the exports of cotton from India in 1894-95 represented the smallest shipment in any year of the past 14. The quantity exported was only 3,385,000 cwts. as compared with 4,789,000 cwts. in each of the two previous years. The quantity of Indian cotton taken by the United Kingdom gets less and less, from year to year. As recently as 1887-88 the proportion of the whole exports sent to the United Kingdom was as much as 40 per cent., even though the Suez Canal had long been operating to bring the continental markets into direct communication with India. Since then the proportion has been gradually reduced until in 1894-95 it was less than 10 per cent.

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## REPORTS ON FOREIGN CROPS.

## CROPS IN AUSTRIA.

The *Wiener Landwirtschaftliche Zeitung* of the 6th May contains a note, compiled from the Official Report issued by the Austro-Hungarian Ministry of Agriculture, upon the condition of the crops in Austria. It appears from this report that the crops have come through the winter very well. In a few localities the spell of cold weather at the beginning of April proved unfavourable to the autumn-sown crops, for they had come on fast during March, and were afterwards exposed to night frosts, with wind and drought, in some instances. This involved ploughing up in a few districts, but this was the exception, and the condition of autumn crops must be generally considered hopeful. Nevertheless, the total yield this year from autumn-sown crops is expected to be below that of 1895; for much seed was destroyed by mice in Bohemia and elsewhere in the northern portion of the Empire, in addition to which the threatened ravages of these mice were the cause of some land being left unsown. These animals had also in many places, particularly in Bohemia, damaged the clover fields. Pasture which had suffered from drought had very generally recovered. Rape had wintered well, but was mostly somewhat later than usual.

The cultivation of spring crops, commenced in March in all the warmer districts, had been interrupted by the cold spell, and could only be resumed during the last half of April; but in some localities cultivation had not begun owing to the fields not being sufficiently dry. Generally, barley, oats, spring wheat, and spring rye were in the ground, and work in connection with maize was approaching completion in the south. Root cultivation was in full swing.

Crops had generally come up well, although in many cases the young plants only became visible about the end of April. Hops had done very well, and vines had made good strong wood; these latter having only suffered from frost, in Lower Austria and Moravia, in cases where the stocks had last year been injured by the *Peronospora*. Fruit-trees had not suffered during the winter, and there was a fair amount of bloom.

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CROPS IN ARGENTINA.

According to information published in the *Buenos Aires Standard*, the rains in the early part of April caused great damage to the wheat of the Republic. The losses in some cases,



where the crops were about to be collected, are stated to have been very severe. The rain was expected to injure the linseed crop in some places. The crop of potatoes this year promises to be exceptionally good. It is calculated that between Rosario and Arroyo Medio there are 25,000 acres under potatoes. Alfafa is reported to be in good condition.

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#### CROPS IN DENMARK.

According to the *Ugeskrift for Landmaend*, the condition of winter sown cereals at the beginning of May was everywhere promising, while the spring sowings were nearly completed. Malting barley had come up well.

In a few districts the cows had been put out to grass, and but for the cold winds this would have been more general. Meadows and pastures were in good condition, but rain was wanted. The sowing of sugar beet was in full swing.

The preliminary official estimates of the Danish harvest of 1895 were published in the *Berlingske Tidende* of April 24th last. The estimated production of the principal crops is as follows: wheat, 4,419,000 bushels; rye, 17,124,000 bushels; barley, 22,328,000 bushels; oats, 37,904,000 bushels; and potatoes, 19,635,000 bushels.

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#### CROPS IN FRANCE.

The dry weather which prevailed in France during the early spring did not cause any apparent injury to the wheat and rye crops during April, although the rainfall was much below the average during that month. Oats generally, in the southern districts especially, were, however, beginning to be affected by the continued drought. Little or no rain fell in France during the first fortnight in May, and according to the *Journal d'Agriculture Pratique*, the grain crops, particularly in light soils, suffered to a considerable extent in the Central, Northern, Eastern, and Western agricultural districts. In the South-west of France, the crops, with the exception of the vine, were seriously compromised, and the hay harvest was reported to be almost doomed.

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#### CROPS IN GERMANY.

The prospects in this country may be considered fairly favourable, the condition of all the crops being between "average" and "good." The following figures, indicating the

average condition of each kind of crop, where 1 represents "very good" and 5 "very bad," were officially issued by the Imperial Statistical Bureau at Berlin, and refer to the middle of May :—

		Wheat.		Rye.		Clover and Lucerne.	Pasture.
		Autumn.	Spring.	Autumn.	Spring.		
May 1896	-	2·5	2·6	2·6	2·4	2·9	2·6
April 1896	-	2·3	--	2·3	--	2·6	2·3

The autumn-sown crops generally, which in April were somewhat above the average, owing to the comparatively mild winter, show some decrease in condition. This is due to the weather, which, at first wet and cold, was followed by cold drying winds in the western and central parts of the empire; in the east the wind was accompanied by heavy showers. Wheat appears to have generally suffered less than rye. Night frosts have not done much damage, but a certain amount of land has been ploughed up in Southern Germany, owing to the corn not having wintered well, or on account of the ravages of mice.

Spring sowing, which had commenced in some districts towards the end of March, had to be suspended during the first half of April owing to snow and rain. The unfavourable weather had checked the progress of the spring corn, which had till then presented a fair appearance. The average condition, as indicated in the table above, is not, however, a representative figure, for in many late districts the corn had not yet appeared above ground.

Potato cultivation was almost everywhere very late, and the reports to hand were not very promising.

Clover suffered in the autumn from mice, and in some localities it had dried up in consequence of drought in the late autumn; while some damage had been caused by frost, the small amount of snow having been insufficient to protect the crop. Considerable areas appear to have been ploughed up, and the general condition was rather behindhand.

Mice damaged the pastures in Wurtemberg and Alsace Lorraine, but not to any very general extent, and the outlook as a whole was fair, although it had gone back somewhat from its forward condition in April.

#### CROPS IN HUNGARY.

The *Wiener Landwirtschaftliche Zeitung* of the 25th April states that unfavourable weather in Hungary during the first half of April had caused a slow development of vegetation and hindered work in the fields. Autumn wheat generally was

promising, but warmer weather was required, both for this and other crops. Rye had suffered in places, and on the whole was weaker than the wheat, particularly between the Danube and the Theiss. Rape had also suffered and would not come up to expectation; in some localities, however, it promised to be a good yield. Spring crops, particularly early sown barley and oats, had for the most part sprouted, but the late cold weather had done them some harm.

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### CROPS IN INDIA.

The Statistical Bureau of the Government of India published on the 7th March last the Second General Memorandum on the wheat crop of the season 1895-96. In the first general memorandum on the wheat crop of the present season it was reported\* that throughout Northern and Central India the prospect was generally unsatisfactory, owing to the early cessation of the autumn rains, which left the ground unusually dry at sowing time, and the failure of the winter rains essential for the growth of the plant. Since the issue of that memorandum at the end of December, there is stated to have been hardly any modification of conditions except in the Panjab, where a timely and general fall of rain, about the beginning of February, averted the disaster which seemed imminent. This rain did not extend generally beyond the Punjab and the western districts of the North-western Provinces. In the Panjab some more rain fell early in March with good results, but more was urgently needed. In the North-Western Provinces and in Bengal also the estimated yield will be very short, and it will also be deficient in the wheat-growing tracts of Western and Central India. Below is a summary of the provincial reports.

In the Panjab, the area sown is now estimated to be a little less than the area mentioned in the first forecast. It is now believed that the area is under, not above,  $6\frac{1}{2}$  million acres (6,444,700), which is 20 per cent. less than the area mentioned in the final forecast of the crop of 1894-95.

In the North-Western Provinces and Oudh, the conditions approximated to those of the Panjab. With the exception of one shower in December, there was no rain until the end of January and the beginning of February, when there was partial rain in the Meerut, Rohilkhand, and Agra divisions. The rain was insufficient where it was heaviest, and in most districts was very scanty. Consequently the crops, which were sown, as in the Panjab, in soil which was dry after the early cessation of the autumn rains, had suffered heavily. The total area amounts to about 3,460,000 acres, which is 25 per cent. less than the area of 1894-95. On this area, in irrigated tracts, the wheat was not much below the average, but in unirrigated tracts a meagre

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\* See Journal of the Board of Agriculture, vol. II., No. 4, p. 428.



harvest was expected. Prospects were reported fair as regards irrigated and unirrigated land, in the Doab, the Agra, Benares, and Gorakhpur divisions, and in Southern Oudh; elsewhere they were bad, the harvest estimate varying from 45 to 75 per cent. of a full average crop.

The early cessation of the autumn rains and the failure of the winter rains had affected Bengal like the other provinces. The area sown was reported to be 1,421,300 acres, which is slightly larger than the area of the crop of 1894-95, and it is suggested that the increase may be due to the partial failure of the winter rice crop. The out-turn, however, is estimated at  $11\frac{1}{2}$  annas only, that of 1894-95 having been  $13\frac{1}{2}$  annas.

In the Central Provinces the outlook was not quite as unsatisfactory as was feared in the beginning of December, for the weather in that month and in January was unusually clear and cold, and prospects were much improved. There was no disease whatever, and though the area sown was relatively small, as a result of conditions similar to those which existed in the North-Western Provinces, and germination on the whole poor, the grain was reported to be of good quality. The estimates of the yield are very low, varying from 4 annas to 10 annas in the rupee, the maximum being expected in only five out of eighteen districts, the deficiency being most marked in the northern and eastern parts of the country.

Conditions in Berar were almost the same as in the Central Provinces; the area sown is estimated to be  $16\frac{3}{4}$  per cent. less than that of the preceding year, and the crop, though it has suffered from lack of moisture, has been saved from disease by the clear cold weather. The harvest is not estimated at more than eight annas, but the quality is good.

In the Nizam's territory the estimated out-turn, in the districts in which wheat is grown to any large extent, varies from about 9 to 12 annas, and will probably be about equal to or better than that of last year. The area is also larger, rain having fallen seasonably for sowing, though the growth of the plant was interfered by the absence of rain later.

In Bombay and Sindh, including the Native States, the area is estimated at about 2,425,000 acres, being 27 per cent. less than the area of 1894-95, and 21 per cent. less than the average. The decline, which is general in the British districts, is due to insufficient moisture resulting from the deficiency of late rainfall and to low floods in the Indus. In the Native States a small increase in the Deccan and Karnatak was balanced by a decrease in Gujarat and Sindh. Rust is reported from various places in the Presidency. The out-turn is reported: in Gujarat (642,000 acres) and in the Deccan (908,000 acres), fair to middling; in Karnatak and the Southern Mahratta States (592,000 acres), middling; in Sindh (270,000 acres), good in Hyderabad and Shikarpur, fair elsewhere.

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## CROPS IN ITALY.

According to the *Gazzetta Ufficiale* the condition of the crops in Italy at the end of April was very promising, but in the northern and central districts rain was badly wanted, particularly for the maize crop, while in many localities the pastures were suffering from drought. Cereals and green crops were flourishing. Fruit trees and vines were also reported to be in a very satisfactory condition.

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## CROPS IN ROUMANIA.

According to information published in the *Curierul Financiar*, the abundant rain which fell towards the end of April had a very favourable influence upon the crops, and the subsequent mild weather encouraged the development of vegetation throughout Roumania. The crop prospects are considered to be good.

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## CROPS IN RUSSIA.

The condition of the winter cereals in Mid-Russia was apparently fair at the end of April, though the fields were still more or less covered with snow. In Kiev the aspect of the winter wheat and rye was satisfactory, and spring sowings were progressing under favourable conditions. Similar reports were received from East Russia, and in the Government of Odessa the autumn crops are reported to look well throughout the province, except in a few places where the fields have been ploughed up and resown.

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## CROPS IN SPAIN.

The drought which has prevailed this year in Spain has given occasion for the publication in the *Official Gazette* of some very interesting meteorological statistics from which it appears that less rain has fallen in Madrid during the first four months of the present year than during the same period of any year since 1860.

During the last twenty years, dry seasons prevailed in Spain in 1878, 1882, 1887, and 1893; and in each case the effect was shown by an increased importation of cereals.

Previously to 1878 the amount of wheat imported exceeded 60,000 tons only in three years, viz. 1869, 1870 and 1871; when rain fell during the first four months on 20, 28 and 22 days respectively. Since 1882 the average imports in years when there was a good or fairly good harvest, or those in which rain fell during the first four months on more than 40 days, are estimated at 150,000 tons.

This increase is attributed to the fact that considerable tracts previously cultivated with cereals were then devoted to the cultivation of the vine, and now that the wine trade is no longer in a prosperous condition the attention of farmers is directed to the advantage of returning to the practice of corn growing, as even in good years the imports of wheat amount to 140,000 tons, representing a loss to the country of 1,000,000%.

It should be stated that the harvest in Spain takes place in June, so that the continued drought will be most disastrous to the corn crops.

The foregoing information has been supplied through the Foreign Office, by Sir Geo. T. Bonham, Bart., the Secretary of Her Majesty's Embassy at Madrid.

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### CROPS IN THE UNITED STATES.

The condition of winter wheat in the United States on the 1st day of May, as reported by the Statistician of the United States Department of Agriculture, averaged 82·7 for the whole country, as against 77·1 in the previous month. This average is nearly the same as the average for the same date last year, when the condition was put at 82·9, and it is 1·3 per cent. better than that of the same date in 1894. The returns showed that excepting in a few States, there had been a general improvement in the condition of winter wheat throughout the country, and the reports, collected through the climatic section of the Crop Service, of weather covering the week, embracing the last three days of April and the first four of May, compared with reports of the previous week, indicated a general improvement of condition in winter wheat in the principal States, but the appearance of the crop was not so promising in Maryland, New York, Pennsylvania and Oklahoma.

The average condition of winter rye on May 1st was 87·7 as compared with 88·7 on the same date last year.

The average condition of winter barley was assessed at 89·2 against 94 and 62·3 respectively in the month of May of the two preceding years. The proportion of spring ploughing done on May 1st was returned at 79·6, which is slightly above the proportion for an average year, though 3·2 less than last year. Mowing lands and spring pasture were reported to be in good condition.

In his April report, the Statistician remarked that dry weather at seeding time, from which scarcely a county was exempt, largely retarded or prevented germination throughout the winter grain region and the winter covering of snow was exceptionally scanty. Rye suffered in most States less than wheat.

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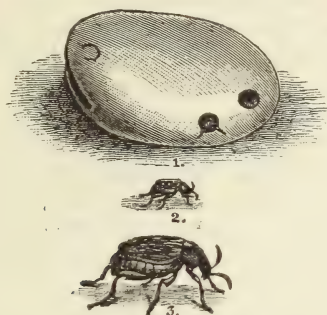


## THE VICTORIAN WHEAT CROP OF 1895-96.

According to the *Melbourne Weekly Times*, the Government Statist of Victoria has prepared a preliminary return of the wheat yield of 1895-96. The returns, unfortunately, are not yet complete, but the figures furnished from 37 shires, including five that as yet are incomplete, give indication of what the harvest was like throughout the Colony. The returns to come are not likely to alter the average to any great extent. The figures to date show that the area under wheat was 1,125,078 acres, yielding 1,115,550 bags. This gives a gross produce of 4,628,231 bushels of 60 lbs., or an average per acre of 4.11 bushels of 60 lbs.

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## INJURIOUS INSECTS AND FUNGI.

THE BEAN-BEETLE (*Bruchus rufimanus*.)

1. Infested bean.

2 and 3. Beetle, natural size, and magnified.

The bean-beetle, *Bruchus rufimanus*, is quite distinct from the pea-beetle, *Bruchus pisi*, described in Vol. II., No. 2 of the "Journal of the Board of Agriculture," though it resembles it closely in appearance, and has similar habits. The bean-beetle is found in many kinds of beans, especially in garden beans imported from abroad; the large varieties known as "Aquadulce" and "Seville Long Pods" being often seriously infested. Imported beans are much more infested than those grown at home, probably because the British climate does not suit the beetle so well. Samples of English grown Mazagan beans have, however, been seen this season badly infested, at least one-fourth having holes in them. The "tick" field-bean is not so often infested, while the Mazagan field-bean is more frequently attacked. The seed of this variety when imported from Mazagan (a port of Morocco) is often full of beetles, and the larger varieties, for sowing in gardens, are also frequently much injured.

Some of the best varieties of garden beans, commonly known as "broad beans," cannot be successfully grown for seed in this country; seedsmen are, therefore, obliged to depend upon seed produced in other countries—Spain, Italy, Morocco, Algeria—where the bean-beetle flourishes. There are often as many as four distinct holes in these imported seed-beans, and the beetles may be seen in the holes as late as the beginning of May.

It is said that the infestation by the beetles does not affect the germination of the beans, and that a bean with holes in it germinates as well, and produces a plant as strong and healthy, as that from a sound seed; but although the germ, or gemmule, which is situated in the broader part of the upper end of the

seed, may not be actually injured by the insect, yet the stores of food laid up for the use and proper development of the future plant are materially lessened. Even if the gemmule is not actually eaten by the insect, it is by no means uncommon to find that it has been bored through in the passage of the larva, and therefore seriously injured in respect of its powers of germination.

An examination of various samples of "Aquadulce" and "Seville Long-pod" beans, made in April last, proved that the gemmule was occasionally completely destroyed by the larva burrowing through it, and that, in other cases, it was affected by the proximity of the hole to it, being displaced, or isolated to a certain extent. Some infested beans were sown in February in a hot-house, sound beans being sown at the same date in separate pots. Those having one or two holes in them germinated at the same date as those not infested, and there was but little difference noticeable in the plants except in cases where the hole was close to the gemmule. In the latter cases either the bean failed to germinate, or the plant was weak and malformed. Seventy-five per cent. of beans having four holes in them germinated, but in a few days their growth was checked, and many of the plants became stunted and made but little further progress. In some cases the "seed leaves," or part of them, were wanting, or they were only half the usual size.

On the 8th of April plants from sound beans sown in February in a hot-house averaged 1 foot 3 inches in height, while those from infested seed averaged only  $5\frac{1}{4}$  inches.

In one pint of "Aquadulce" beans taken from a bulk of three bushels, 60 per cent. of the beans were punctured, and half of these had more than one hole in them.

### *Life History.*

The best authorities hold that the bean-beetle is not indigenous, but was imported into this country, throughout which it is now spread, and has become far too abundant in many places.

Its length is rather more than one-eighth of an inch, being not quite so long as the Pea-beetle, *Bruchus pisi*. Its general colour is light brown with grey shades. The thorax is more of a mouse colour; the abdomen is of a dark mouse colour with grey pubescence; the legs are dark, except the first, or anterior, pair, which are red, and this characteristic distinguishes *Bruchus rufimanus* from other species of the *Bruchidae*. The mandibles are reddish; the antennæ are black, with the exception of the four basal joints, which are red; and the elytra are somewhat dark with grey flecks or patches. The elytra do not cover the whole of the body, the last ventral segment, or pygidium, which is of a grey colour and without the black spots that are upon the pygidium of *Bruchus pisi*, being exposed.

Some beetles are sown with the seed beans, and emerge from them when they begin to swell and grow. Others escape into the fields from the warehouses and granaries where infested beans have been stored. They are strong on the wing and can



fly long distances. Pairing takes place in June, and the female places her spindle-shaped yellowish eggs on the soft green pods of the bean plants. From the eggs, yellowish-white maggots with black heads emerge in from 13 to 15 days, and, making their way into the nearest beans, burrow into them. They remain in the beans, living on their substance, until they change to pupæ, and finally to beetles. In some cases, the beetles leave the bean during the winter, but generally they stay there until the early spring. They may be found as late as May in the beans. The maggot is fleshy, with strong jaws and rudimentary legs, and is rather more than one-eighth of an inch long. It feeds on the contents of the bean for a period varying from three to four weeks, when pupation occurs. If infested beans are examined, small black punctures quite closed up may be noticed upon them, evidently made by the maggot in entering them while they were young and soft. There are also other holes from which the beetles have escaped, or are escaping, as shown in the illustration, and small, almost transparent, circles of skin still covering holes containing beetles. These circular covering doors are left by the maggots in such a way that the beetle can escape by using gentle pressure. Upon splitting open a badly infested bean lengthways, it is seen that the greater part of the inside has been consumed, and that some of the holes run into each other. At the end of each hole there is a collection of yellow *debris* of bean flour and excrementitious matter. The beetles also eat the contents of the bean, as bean flour has been found in their intestines.

Professor Riley, in 1882, discovered that the American Bean-beetle, *Bruchus fabæ*, Fitch, *Bruchus obtectus*, Say, much resembling *Bruchus rufimanus* in form and habits, bred in warehouses and granaries upon dry beans, as well as in the fields upon the growing bean pods—that it had, in fact, two generations. The egg was laid upon the dry bean. After 16 days the maggot appeared, penetrated the bean, and lived in it, feeding on its flour. Professor Lintner confirms this statement.

### *Remedies and Methods of Prevention.*

No remedial measures are available against the attacks of this insect. Great care must be observed in purchasing seed beans and in noting whether they are infested. If infested beans are sown there is not only possible failure of germination, or weakness of plants corresponding to the amount of infestation, but there is the risk of introducing the beetle wherever the seeds are sown. Infestation is indicated by very minute black punctures, by open holes, or by small circles of almost transparent skin on the beans. Foreign seed should be especially examined, as it is far more extensively infested than that produced in Great Britain. Beans imported from America would probably contain another species of beetle, *Bruchus fabæ*, Fitch, *Bruchus*

*obtectus*, Say). This is about the same size as *Bruchus rufimanus*, but has specific differences in colour and markings. The indications of this infestation in the beans are, however, identical.

Steeping seed beans in the compounds used for pickling seed would kill or rout the beetles that are in the open holes, but it would not affect those protected by the covering of skin. Strong brine would probably be the best steep for the purpose, and might penetrate the coverings. Placing infested seed beans in hot water is recommended, but the difficulty in this case is to avoid killing the gemmule of the bean. Professor Lintner, in his article on the American bean-beetle *Bruchus obtectus*, in the seventh report on the Injurious and other Insects of the State of New York, 1891, says "it is stated that seed beans will bear immersion in water at the boiling point for one minute without injury to the germ. We would prefer recommending hot water below the boiling point for about half a minute. Examination would show if this was sufficient." An experiment was made with infested "Aquadulce" beans by putting them in boiling water for one minute. The beetles within the beans were all killed, although many of them were still covered in by the circular doors. The beans were planted and germinated in due course, except those that had three or four holes in them, and those where the holes were close to the gemmule, which, being exposed, had evidently been injured by the boiling water. The fumes of bisulphide of carbon will kill the beetles if the bin, box, or vessel containing the beans can be made air-tight or nearly so. The bisulphide of carbon is put into an iron pan on the beans, or above them, and the fumes, being much heavier than air, descend into the beans, permeating them thoroughly and killing the insects without injury to the germs of the seed. In Canada it is the common practice to treat seed peas with bisulphide of carbon.

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THE COMMON SWIFT MOTH (*Hepialus lupulinus*).



1. Moth. 2. Caterpillar, natural size.

The caterpillars of this moth were very troublesome in some places during the winter of 1895-96. On account of the unusual mildness of the weather the caterpillars were not driven

down into the earth, but remained near the surface in an active state, devouring the roots and shoots of plants that happened to be near them, and much injuring corn, vegetable, and herb crops on farms, market and kitchen gardens. Wheat was attacked in several places. Plants of the *Brassica* kind, such as Brussels sprouts, winter greens, and cauliflowers were attacked, and lettuce plants spoilt in many market gardens. Mint, which also suffered much, appears to be highly relished by these voracious larvæ. Grass land is often injured by them, and the injury is sometimes attributed to "leather jackets," or grubs of the "Daddy Long-legs," *Tipula oleracea*, and to Cockchafer grubs. The grass of lawns and cricket grounds is occasionally killed by these caterpillars, whose pupæ have been seen in turf cut from infested grounds. Winter beans and winter tares are also eaten by them; in short, there is hardly any green crop that comes amiss to their omnivorous appetites.

As they feed from early autumn until the spring, except when frost forces them to go below the roots of plants, their action is exceedingly destructive, for it occurs at a time when plant growth is more or less dormant, and the plants cannot recover quickly and throw out fresh roots and fibres as in the spring and summer.

### *Life History.*

This moth belongs to the family *Hepialidae* and to its sole genus *Hepialus*, of which there are five species. It appears towards the end of May or the beginning of June, and may be identified by its rapid flight, especially of the males, for which reason it is termed the "Swift Moth." The length of its body is nearly half an inch, and the wing expanse is from one inch to one and a half inches. The colour varies extremely, but the typical colour of the body is light brown, or brown with yellowish shades. The fore wings are brown, with light brown cilia, showing considerable lustre, and with white streaks and spots. The hind wings have darker shades of brown without lustre. Some female specimens are without the white streaks and spots upon the fore wings. The head is tawny, with very short antennæ. Careful observers have noticed that the male is attracted to the female by a peculiar odour, as in the case of *Hepialus humuli* and *Hepialus sylvinus*. Females have been watched flying slowly and dropping dark coloured, somewhat oval eggs among grasses and other plants.

The caterpillar is found as early as July at the roots of grasses and most other plants. It is rather more than an inch long, whitish in colour, with a brown head, and the segment next the head is somewhat brown or chestnut coloured. The dots on the back are light brown with black hairs. The spiracles are black, and have two black hairs above each. There are three pairs of claw feet, four pairs of sucker feet, and a pair at the end of the tail. A peculiarity of this caterpillar is that if touched or disturbed it jumps or wriggles backwards.



The pupa is light brown, shiny, and three-quarters of an inch long. It is formed in a cocoon some way below the ground, in which it moves quickly backwards and forwards when disturbed. This movement, like the wriggling of the larva, is characteristic.

### *Remedies and Methods of Prevention.*

There are hardly any reliable methods of preventing the attacks of this insect. The eggs are spread broadcast by the female moths in fields, meadows, and gardens, and among all kinds of crops.

Hoeing, with sharp hoes, cropped land that is infested would certainly kill some of the caterpillars. Wheat, winter beans, winter barley, and oats could be treated in this way.

In market gardens, and gardens where valuable crops, such as lettuces, greens, cauliflowers, mint, and parsley, are grown, hoeing should be thoroughly and carefully performed, and as close to the plants as possible. It would possibly pay to move the soil round valuable crops of this class with a finely pointed hoe, or "pick," and to hand-pick the caterpillars.

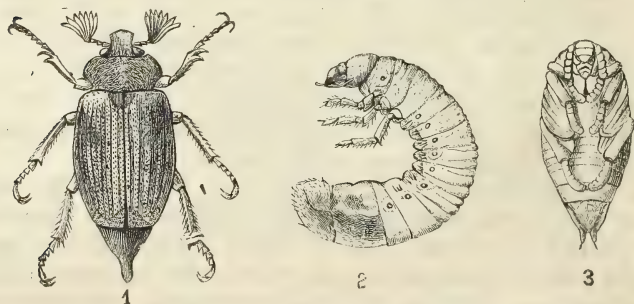
Where grass is seriously infested, and meadows, lawns, and cricket grounds are injured, it would be well to apply a mixture of soot and lime, in the proportion of one bushel of soot to two bushels of lime. Gas lime alone, or mixed with soot, would be equally useful. This should be lightly worked into the ground by means of harrows, horse-hoes, or hand-hoes. Infested wheat should be ring-rolled. In the case of roots and delicate plants small hoes or "picks" may be employed.

Kainit put close to infested plants and chopped in has proved serviceable. Wood ashes are most objectionable to these caterpillars, as well as to others. They should be scattered round the plants and hoed in just under the surface.

Rooks and starlings are fond of these caterpillars, and blackbirds have also been seen pulling them up in gardens.

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### THE COCKCHAFER (*Melolontha vulgaris*).



1. Perfect insect ; 2. Larva ; 3. Pupa. All natural size.

The large grubs of this insect have done considerable harm in the last two or three seasons, in some localities, to grass,

corn, and other crops, as well as to various garden crops. The cockchafer themselves also, in some instances, have seriously injured the foliage of certain trees and shrubs, particularly of the oak, beech, and chestnut trees, and fruit trees have been attacked by them. They also eat grass, all kinds of corn and pulse, and most vegetables. In Great Britain, these insects are, fortunately, not nearly so plentiful as in Germany, France, and other countries, where they cause serious injuries to trees, and to farm and garden crops; but they have decidedly increased in late years, and action should be taken to check them, or they may prove as troublesome as in some parts of the Continent.

In some of the Departments of France, it is necessary for the Prefects to issue decrees compelling owners and cultivators of land to take measures for the destruction of these insects, from the time of their first appearance in the spring until the 15th of June.

The grubs of the cockchafer are very destructive in seed beds of all kinds, and particularly in those of young trees. These, as well as all trees newly planted out, should be carefully watched by foresters, as the beds, or nurseries, of young trees have generally fine soil at the surface in which the cockchafers like to lay their eggs.

The grubs are most destructive to young trees, biting their roots, thereby checking the growth of the trees, and frequently killing them outright. They are most injurious to fir trees in this country, and cause incredible mischief in German and French fir plantations.

Grass-land is often infested by the cockchafer grubs which eat the roots, and kill or weaken the plants. In infested grass-land, many plants of grasses may be seen lying withered, or withering, from the attacks of the grubs. Rooks, which congregate in such circumstances, attracted by the grubs, are often unjustly accused of injuring the grass plants.

### *Life History.*

The Cockchafer, or May Bug, is a brown insect about an inch long, having the body covered with short greyish down. There is a long curved projection at the end of the body. Its antennæ are remarkable, their extremities having laminae, or leaves, folding together like a fan. In the male there are seven of these; in the female only six. The jaws are strong. It has large hooks upon its claws enabling it to cling to leaves and branches, and its legs are well adapted for burrowing in the ground.

Egg-laying takes place at the beginning of summer. The female chooses loose, dry soil, and buries the eggs, which are white and of the size and shape of a hemp seed, from 6 to 8 inches deep. Each female lays from 40 to 60 eggs, and places them in groups of 10 to 25. In six weeks the grubs appear—thick, fleshy, and dirty white in colour. These are more than  $1\frac{1}{2}$  inches long when full grown, with shiny ferruginous heads, and three pairs

of legs of the same colour. The antennæ have four joints. The lower end of the body is curved and swollen, and the blue or violet coloured contents of the gorged abdomen are plainly seen through the skin.

The grubs live and destroy for three summers, working near the surface among roots and fibres in the summer and autumn, and going down deep into the earth during the winter. Their mischief is not considerable during the first year, but in the second and third years the amount of food they consume is almost incredible. Towards the end of the third year the grubs go down from 18 to 26 inches deep in the earth, and pupation takes place in cells of an oval shape, from which the cockchafer come in the following spring, and begin to feed upon trees, shrubs, and green crops near them.

### *Remedies and Methods of Prevention.*

The best way of preventing injury from cockchafer and their grubs, is to destroy the former when they appear upon trees and shrubs in the spring. In France and Germany, regular and systematic warfare is waged against cockchafers. They are beaten down from the trees on to tarred boards, or into large sacks, with poles and sticks, and killed. The best time for this is the early morning and when the weather is dry. These insects are generally sluggish during the daytime, and fly in the twilight; but they do not go far from where they were reared, so that those who destroy them systematically reap the principal benefits. It is important, however, that there should be unity of action as in Continental countries, and observations should be made in infested localities to note the triennial swarming time, in order to take measures to destroy the beetles as they appear. In France and Germany, the years when swarming is expected are regularly chronicled. In nurseries and seed-beds in infested places, nets with fine meshes spread over freshly sown seeds for a few weeks in the spring would prevent egg-deposition. When young trees and shrubs, in nurseries or recently planted out, wither and droop, examination should be made round their roots for cockchafer grubs. German and French foresters put traps of freshly peeled, tender rind, and small green boughs—*Fangrinden* and *Fangkneippel*—close to young trees and shrubs where there is infestation. The grubs are enticed away by these and may be taken under them.

Where grass land is badly attacked, the earth around spots where the grass is dead or dying should be dug up, the grubs picked out as far as possible, and hot lime or gas-lime worked in.

It is very difficult to affect these grubs by means of top dressings, as they go deeply into the earth. Prolonged folding of sheep—especially ewes and lambs—on infested grass land, and feeding them with swedes or mangel carted on, has been found very efficacious.



In infested corn crops, frequent horse and side-hoeing would be of advantage. Soot and lime hoed in might check the grubs. Hoeing and hand-picking should be adopted in garden crops, especially in asparagus beds, which are often seriously injured by cockchafers. In the case of asparagus, a pick must be used to work among the roots.

Rooks, starlings, plovers, and gulls should be encouraged, as they all are destroyers of the grubs. Moles and shrewmice feed upon them, and both of these animals should be protected. Bats, owls, and night-jars clear off quantities of the cockchafers flying heavily in the twilight.

Attempts have been made in France and Germany to destroy the cockchafer grubs by infecting them with fungi—*Botrytis tenella* and *Isaria densa*; but the results are not on the whole satisfactory. Infection is communicable by means of living infected grubs, but not by dead ones, and it is obvious that it would be difficult to communicate infection rapidly and extensively among grubs living entirely underground, and not necessarily in community.

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#### POTATO SCAB.

A note has been recently communicated to the French Academy of Science by M. Roze, relating to some investigations he has made as to the origin of the American potato scab, in which he draws conclusions somewhat differing from those formed by the American experts, Dr. Thaxter and Dr. Bolley, the former of whom attributes this disease to one of the mucedines, or moulds, which he terms *Oospora scabies*, and the latter to a bacterium which he has not named specifically, but which he believes produces the more deep-seated little cavities in the pustule-shaped abrasions which cover scabby tubers at harvest time.

M. Roze had at his disposal some potatoes of the variety known as "American Wonder," attacked by scab which, as he remarks, is developed solely on the surface of the tubers; and he quickly discovered that the only way of studying this affection is to trace it from its commencement. As it had been already established in the United States that a scabby seed-tuber communicated scab to the tubers springing from it, M. Roze filled two pots with earth and planted in each pot a scabby tuber, together with seven or eight small tubers of the early variety Marjolin, which were perfectly sound, having been just dug up, in order to ascertain whether they would be infected by the scabby tuber, as had resulted in similar experiments in America. At the end of a month it was noticed that there were small brown spots upon the surface of the Marjolin potatoes, and that under these spots there were little whitish excrescences, or growths,

which slightly raised the embrowned epidermis. These being highly magnified were seen to be composed of one or two thickly tufted mycelia of mucedines (moulds). M. Roze did not recognise *Oospora scabies*, Thaxter, in these forms, but considered that they differed in the various excrescences examined. Under these growing mycelia the cellular tissue of the first layer of the parenchyma was to a great extent softened, and one or two species of bacteria, more or less mobile, were observed. These results corresponded fairly in all cases with those obtained by American observers, and showed that these mucedines and bacteria together produce by their development the future small pustular cavities made by this disorder.

But M. Roze further discovered, in examining with a magnifying glass the surface of the Marjolin tubers thus attacked, that the epidermis, or thin upper layer of skin, was covered with smaller spots of a paler brown, at first pointed in shape, and afterwards gradually developed into the small warty growths which had been previously observed. Under the microscope these very small brownish spots appeared to be formed of the cellular tissue of the skin, more or less decaying, and having within them a small number of extremely small rod-cells of a micrococcus which could not be easily distinguished from the normal constituents. These were best observed in the transparent mucus, which adhered to the broken down walls of the cellular tissue. Seen under very high powers and treated with methylene blue solution, this micrococcus appeared to be nearly spherical in form, and of a diameter of about the five-hundredth part of a millimetre. It was also present in other dead cellular tissue, and occasionally among the mycelia of mucedines which pervaded the dead tissue.

It was remarked also that the epidermis pushed up by the warty excrescences always showed the cellular tissue, embrowned and killed by the micrococcus. In consequence of this M. Roze was led to consider that the micrococcus was the first cause of this disorder, by, as it were, facilitating the introduction of other parasites which take advantage of the favourable substratum it has prepared for them. He believes that the first penetration of the epidermis of the tuber is a special faculty of this new micrococcus, and that it thrives only upon the epidermis (*epiderme*), or the skin (*peau*), whose cellular tissue it destroys. M. Roze names it *Micrococcus pellucidus*, and observes that it is able to exist not only on potato tubers out of the ground, but also in the ground.

Although Drs. Thaxter and Bolley succeeded in inoculating sound potato tubers with their *Oospora scabies* and their bacterium—and this might be considered as a proof that these parasites were the primary cause of the malady—M. Roze holds that this is explained by the results of an experiment he made by inoculating potato tubers of the variety known as Victor, with spores of *Fusisporium solani*. The tubers were not at

first infected by the spores of this mould, but some rod-cells of *Micrococcus albidus*, found mixed with the *Fusisporium* spores penetrated them first, and formed distinct colonies, and the *Fusisporium* did not show itself until later on.

The American experts, according to M. Roze, profited unawares in their experiments by the assistance of *Micrococcus pellucidus* in helping on the first developments of the moulds and bacteria, and in producing together the disease of potato scab.

It is discouraging to find from M. Roze's experiments that the micrococcus which originates potato scab is preserved in the ground, and presumably is able to infect potatoes planted within its reach.



## GENERAL AGRICULTURAL NOTES.

## TAR-BRANDING OF SHEEP.

The Board of Agriculture have received communications from the Halifax and Huddersfield Chambers of Commerce, intimating that local representations have been made by wool spinners and manufacturers as to the inconveniences resulting from the branding of sheep with tar and similar substances. It is represented that a large quantity of wool used in the manufacture of carpets and similar productions does not undergo the process of sorting, and thus it frequently happens that, in spite of endeavours to take out tar-marked wool, the tar-marks pass through the various stages into the finished goods, thereby causing considerable damage and loss. It has been suggested that if flock-masters and others were made generally aware of the fact that tar is not dissolved in the ordinary processes of wool-washing, discussion might be usefully elicited as to whether, with a due regard to the interests of sheep farmers, it would be possible, in any cases, to limit the present use of tar in marking sheep.

The feasibility of effecting any improvement in the methods of application, either by making the branding irons smaller, or by more careful mixing, to prevent the tar from running, may also be a matter not unworthy of consideration by practical wool growers.

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FRENCH IMPORTS OF CATTLE AND THE TUBERCULIN TEST.

On April 30, 1896, the Board of Agriculture issued a notice to the Press drawing the attention of exporters of cattle and others to a decree recently issued by the French Government, which provides that cattle imported into France, other than those intended for immediate slaughter, must, after the 15th April 1896, be subjected on landing to the tuberculin test, and will be kept under observation at the expense of the importers for not less than 48 hours. In the event of the test not being satisfactory, the cattle will be turned back after having been marked, unless the importer consents to the immediate slaughter of the animals under the supervision of the Customs veterinary officer.

Cattle intended for immediate slaughter are not subjected to the tuberculin test, but can only be sent to the markets of places which possess a public abattoir, and their slaughter must be certified by the veterinary surgeon in charge.

In connection with the foregoing decree, the Director-General of French Customs has issued a circular dated 17th April 1896,

wherein it is explained that the tuberculin test is only intended for *foreign animals* which are *imported* into France in the strict sense of the term, and that it does not apply to cattle merely landed in France in transit to other countries.

Animals in transit through France are not liable, either to be tested for tuberculosis—whether they be store cattle or intended for breeding—or even to be branded in the case of fat cattle for slaughter. To benefit by this exception cattle in transit through France must, however, be conveyed in trucks or waggons which are duly sealed.

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### AGRICULTURAL BANKS IN BELGIUM.

The establishment of agricultural banks in Belgium dates from the year 1891, when the Abbé Mellaerts, general secretary of the “Boerenbond” of Louvain, began a very active propaganda in favour of the Raiffeisen credit banks.

These associations are based on the principle of unlimited liability, and of strictly confining their action within the smallest possible district, preferably a single commune or parish. They are generally similar to those described in a recent number of the *Journal*\* as existing in Bavaria. The business of a savings bank is joined to them, so that the loans to members are defrayed out of the deposits, though, as will be seen later on, the banks can borrow from the General Savings Bank. Some modifications have been introduced into the system so as to adapt it to Belgian legislation.

The first Raiffeisen bank in Belgium was opened in the commune of Rillaer, in the arrondissement of Louvain. The population of this commune, of about 2,200 inhabitants, consists mainly of small farmers and seven or eight landed proprietors. The bank was founded in September 1892, after a meeting of all the inhabitants convoked by M. Mellaerts. Fifty-one members were at once enrolled, and the association commenced work in December, the transactions amounting to over 200*l.* during the first fortnight.

M. Mellaerts soon recognised of what importance the General Savings and Annuity Bank might be in promoting the success of the Raiffeisen banks. He accordingly approached its directors, and they decided in 1892 that the Bank could, as an experiment, make advances to savings banks and loan associations up to 600*l.* at  $3\frac{1}{4}$  per cent. These advances are made against an acknowledgment signed by the association and endorsed by any two persons (members or not) whom the Bank will accept. This decision contributed greatly to the success of the Raiffeisen system in Belgium, for, if the local banks stood in need of funds, as might easily happen at first, recourse could be had to the General Savings Bank.

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\* *Journal of the Board of Agriculture*, Vol. II., Part 2, page 125.

The administration of the General Savings and Annuity Bank has published a manual on agricultural co-operative credit societies, containing provisions regulating the relations between them and the General Bank, and indicating generally the lines upon which these institutions should be organised. The most important are the rural banks working on the Raiffeisen system; various local banks group themselves into a central co-operative society with limited liability, whose special function is to act as intermediary between the affiliated local associations and the General Savings Bank. The latter opens credits with the local banks only upon the surety of the central society, to which they must be affiliated, and which undertakes the supervision of their operations and deals with any matters of interest to them all. The guarantee fund of the central bank is divided into two portions. The first is paid in cash each year by the rural bank; it amounts to about  $\frac{1}{4}$  per cent. of the total of the loans agreed to by the bank. The second portion is payable on account and is conditional. The central bank leaves this second portion at the disposal of the local bank so long as the latter continues working; in case of its liquidation, of important alterations in its statutes, or of its dissociation from the central bank, this sum devolves to the latter, which can only utilise it in defraying expenses incurred in the creation of new banks.

Any co-operative society of agricultural credit can open a current account with the tax-collector (acting for the General Savings Bank) of the district in which the headquarters of the association are situated; the interest allowed on these deposits, whatever be their amount, is fixed at 3 per cent. The association, on making its first deposit, will receive within eight days, through the tax-collector, a current account book in which all the operations are to be entered. If it requires a loan from the General Savings Bank, application must be made, through the central society, to the director, and sums, not exceeding the total amount which the General Savings Bank is prepared to advance, will be paid to the local association through the intermediary of the tax-collector. The interest on these loans is  $3\frac{1}{4}$  per cent. per annum. The association is at liberty to pay back the advances, in whole or in part, and fresh loans can be obtained, so long as the total amount granted by the General Bank remains unexhausted.

The formalities are thus reduced to a minimum, all that is necessary is to demand from the General Savings Bank—through the central bank—a credit account, and the tax collector will be at once empowered to open a current account with the local bank, which can then obtain loans at the rate of  $3\frac{1}{4}$  per cent., and make deposits up to any amount at 3 per cent. This last point is an important concession to the rural credit associations, similar to that already granted to recognised mutual societies, for, under ordinary circumstances, the savings bank pays only 2 per cent. on deposits above 120*l*.

As already noticed, the General Savings Bank grants advances only upon the guarantee of a central bank to which the local



bank must be affiliated. Thanks to the initiative of the "Boerenbond," such a central association with limited liability has lately been constituted, under the title of "Société Centrale de Crédit de la Ligue des Paysans." Associates (*i.e.*, the affiliated local banks) must subscribe to at least one share fixed at 100 francs (4*l.*), on which 10 per cent. is paid up at the time of subscription; each share involving a liability of 40*l.* The rural banks are also required to pay an entrance fee of 2 francs per share, and a half-yearly contribution of 10 centimes (1*d.*) for every member on their lists. The central bank only lends, or gives its guarantee, up to the maximum amount for which the local bank has become responsible in case of loss, *i.e.*, ten times the amount of the shares subscribed.

There are actually 25 Raiffeisen banks in Belgium, the earliest of which, at Rillaer, dates from 1892, and is at the present moment still the most considerable, from every point of view. The number of members in the Rillaer Raiffeisen Association in June last was 87, and the number of loans made since the opening of the bank in September 1892 to June 1895 was 57, amounting in all to 631*l.*, or an average of 11*l.* for each loan. Loans are issued at 4½ per cent. interest, and the rate of interest paid on deposits is 3 per cent.

The interest on deposits is, in 23 of the banks, 3 per cent. The interest required on loans is 4 or 4½ per cent. (except in two instances where it is 3½ per cent.), five only—the five earliest—demanding the higher rate. The limits between which loans are granted vary considerably in different banks; the lowest maximum is 5*l.*, the highest 240*l.* The minima range from 8 francs (6*s.* 5*d.*) to 12*l.* One bank lends only sums of 8*l.*

Taking all the 21 banks actually in operation, the total amount of loans, up to 25th June 1895, was 2,824*l.*, and the deposits amounted to 5,534*l.*

The purposes for which loans are required are exhibited in the following table, showing the loans granted by the Rillaer Bank during the period:—

Object of Loan.	Number of Loans.	Total.	Average.
		£ s. d.	£ s. d.
Purchase of a cow	34	227 18 0	6 14 0
„ an ox	5	53 0 0	10 12 0
„ a plot of land	2	12 0 0	6 0 0
„ a house	2	35 0 0	17 10 0
Repairs to a house	1	10 0 0	10 0 0
Extension of business	4	116 0 0	29 0 0
Payment of an old debt	5	60 0 0	12 0 0
Establishing a young couple in life	3	106 0 0	35 7 0
Sickness expenses	1	10 16 0	10 16 0
Total	57	630 14 0	11 1 0

In one case the loan was for a period of  $3\frac{1}{2}$  months, in four cases it was for 10 years. On an average, a loan is for about five to six years. The loan obtained does not necessarily represent the whole cost of the purchase, &c.; a farmer may, of course, have asked only for a sum sufficient to make up, with his own savings, the amount he required.

Besides the purposes mentioned in the above account, money has been lent by the rural banks to their members in other communes for such objects as the installation of a co-operative dairy; the purchase of agricultural implements, or of manures; the payment of legal costs incurred in dividing property; the purchase of wood, of young pigs, fodder, flour, a horse, &c.

Hitherto the cattle, as a rule, have not belonged to the small farmers, who have been obliged to hire it under very onerous conditions. By means of these loans the small farmers have now been enabled to acquire a cow or an ox. In these instances the loans are only granted upon good security; the bank obliging the proprietor to insure the cattle.

At the outset, the Rillaer Bank borrowed 40% from the General Savings and Annuity Bank. This is the only association which has been thus compelled to borrow; in all other cases the deposits have been sufficient to meet the loans. It is worth notice that up to the present all the loans have been met by the debtors as soon as due, and in some instances even before they were due.

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#### FRUIT GROWING IN VICTORIA.

The fruit-growing industry of Victoria has not made the progress that was anticipated, not only by the growers themselves, but by the general community. When the Victorian Government, some six years ago, set apart a large sum of money for the encouragement of fruit-growing, it was fully expected that a large and profitable industry would quickly be established. Bonuses amounting to 3% per acre were offered and paid for all land planted with fruit to the satisfaction of the Department of Agriculture. Bonuses were also offered for both canned and dried fruits exported. For a time there was a great fruit planting boom, and hundreds of people rushed into the industry in the full expectation that in a few years it would furnish highly remunerative returns for themselves and their families.

But according to the *Melbourne Weekly Times*, it is not going too far to say that 75 per cent. of the individuals who took up the industry have been sadly disappointed. Fruit-growing, so far, has not proved the lucrative occupation enthusiasts predicted it would be. The fault, however, does not lie with the production of fruit crops. The cause of this failure is attributed mainly to the want of knowledge on the part of the growers as to the best means of picking, packing, and marketing their crops. There is said to be a general want of uniformity in the methods of picking fruit, and also of its packing for market. It is urged

also that the jealousy which exists amongst growers in different districts, must do a lot of harm to the industry.

It is maintained that the great need of the fruit-growers is some kind of co-operative organisation, founded on lines somewhat similar to those of the Dairymen's Association of Victoria. Such an organisation should be thoroughly representative, and be governed by a central council chosen from its own members. From a council of this kind would be issued general instructions, gained from practical experience, that would be of immense advantage to all engaged in the industry. Combination in this direction would, it is believed, put the fruit-growers in as strong a position as the dairymen, and it is admitted that the success of the dairying industry, to a very large extent, has been owing to the influence wisely exercised by the Dairymen's Association.

As regards the prospects of the development of the export trade in fruit, the journal already referred to remarks as follows : " At present there exists a comparatively small output for the enormous quantity, and great variety of fruit which is produced in Victoria. Year after year reports have been received of fruit being allowed to fall off the trees or being fed to pigs, because of no profitable market presenting. And yet there are unquestionably great avenues of trade which can be opened up, and of which co-operation is the sesame. The facilities that exist to-day for the carriage of fruit, even of the most delicate description, either over land or sea, are immeasurably superior to those of a very few years back. If we go back to a decade ago, it may be said that there were no facilities at all for long distance shipment, and certainly not so far as perishable fruits were concerned. To-day the grape and the strawberry, the ripe apricot, and the luscious peach and nectarine can be sent over miles of land and ocean, to arrive at their destination in perfect condition. That has been proved by practical test. Fruit not of so easily perishable a character, can be sent away over sea still more easily and less expensively. The Tasmanian apple-growers have established a large and profitable trade, which they have carried on now for several years. In this respect they have shown the way to Victorian fruit raisers. The factory, of course, is intended chiefly for the preservation of fruit for its manufacture into jams and jellies, and its conversion into half a hundred different forms for table and cooking use. But it will also serve as a convenient storing centre for fresh fruit, and a point from which to carry out the shipments. Given a sufficiently large output, and a proper regularity of shipments, there can be little doubt of the success of such an effort to establish a trade. A country which can grow the strawberry and the orange, the lemon and the pear side by side, need experience no difficulty in maintaining an export trade all the year round. It will entail some preliminary expenditure, hard work, and watchful attention. The fruit growers of Victoria should have no difficulty in fulfilling all these conditions."



## WHEAT GROWING IN QUEENSLAND.

The Annual Report of the Queensland Department of Agriculture for the year 1894-95 contains interesting information on the development of wheat-growing in Queensland. The statistics of wheat production in the Colony reach back to 1867, when 2,657 acres were in cultivation, while in 1894 the total area of wheat amounted to 28,997 acres. Although there has been a substantial gain in the 27 years, the increase is regarded as almost trivial compared with the development of wheat culture in Argentina and the United States. That this slow movement is not due to any failure on the part of nature to respond to the efforts of cultivators is shown by the fact that in the last 16 years Queensland has 10 times stood at the head of the Australasian colonies in the yield of wheat per acre, and only three times has she been the lowest on the list, while the average yield of the Queensland wheat fields during this period is nearly five bushels per acre above the average of the other four colonies for the same time. It appears that wheat-growing in Queensland has not progressed by leaps and bounds, for the same reasons that farming in general has not advanced at a rapid pace; the counter attractions of squatting and mining have been too great for the would-be farmer, and few of the colonists have been farmers.

The following table shows Queensland's annual production and importation of wheat and flour for each of the 10 years ending with 1894:—

Year.	Wheat Grown.	Importations.			Bushels Imported to each Bushel Grown.
		Wheat.	Flour.	Total Wheat and equivalent of Flour in Wheat.*	
	Bushels.	Bushels.	Tons.	Bushels.	
1885 - -	51,508	10,297	33,820	1,701,297	33
1886 - -	21,221	19,364	36,451	1,841,914	86
1887 - -	182,308	53,101	44,202	2,263,101	12
1888 - -	8,263	16,719	39,994	2,016,419	244
1889 - -	134,335	109,588	41,371	2,178,138	16
1890 - -	207,990	326,484	41,122	2,382,584	11
1891 - -	392,309	261,086	33,433	1,932,736	4·9
1892 - -	462,583	269,487	36,324	2,085,687	4·5
1893 - -	413,094	372,559	34,188	2,081,959	5
1894 - -	545,734	415,734	34,004	2,115,934	3·8

As regards the possibilities of the future in the direction of an extension of the wheat area, it is pointed out that millions of acres of the Darling Downs, which are among the best wheat

\* The millers' figures of 50 bushels of wheat to the ton of flour are used in this computation.

lands in the world, are now profitlessly employed in supporting less than one sheep to the acre, and that similar areas of the Peak Downs, and great stretches of fertile plains west of Roma and Barcaldine, all unsurpassed wheat soils, are, like the Darling Downs, given over to stock-keeping. The process of converting these stock ranges into wheatfields is stated to be already well advanced, the largest wheat-growers in the colony to-day being the squatters. It is mentioned as a suggestive fact that those squatters who, on the Darling Downs and elsewhere, began extensive wheat-growing a few years ago, have, in nearly every instance, and in face of the abnormally low price of wheat, kept steadily at the business, gradually enlarging their operations, and finding it the one profitable part of the year's operations.

In view of these circumstances, it is believed that within the next decade, and with no more than the stimulus of existing prices, Queensland will not only meet her own requirements of bread grain, but that she will add wheat to her exports of wool, meat, and sugar.

In answer to the question, "Does wheat growing pay?" the report states that it is unremunerative when the price drops below a half-a-crown per bushel. The following figures are given as the cost of producing one acre of wheat in Queensland under the two systems of harvesting in vogue in the colony, that is, where either the stripper or the harvester is used to gather the crop.

With the Stripper.				With the Harvester.			
		s.	d.			s.	d.
Two ploughings	-	-	11 0	Two ploughings	-	-	11 0
Three harrowings	-	-	2 0	Three harrowings	-	-	2 0
Seed and sowing	-	-	3 0	Seed and sowing	-	-	3 0
Stripping and winnowing	-	-	10 0	Cutting and binding	-	-	5 0
				Stacking	-	-	4 0
				Threshing (1s. 8d. per bag)	-	-	6 3
Total	-	£1	6 0	Total	-	£1	11 3

Taking the yield per acre at 18·8 bushels (Queensland average 1894), the gross return at 2s. 6d. per bushel would be 47s., leaving a gross profit per acre of 21s. with the stripper and 15s. 9d. with the harvester.

To the account of cost must be added rent, taxes, if any, and the cost of hauling the grain to markets, items that vary with different localities, but the above estimates are said to be sufficiently liberal to cover nearly every ordinary circumstance of wheat-growing in the colony. For the light lands about Roma several of the items of this statement of cost are believed to be much too high. The cost of ploughing would, again, be greatly reduced where double or treble furrow ploughs were

used, while to the farmer owning his own machinery good wages would be possible in harvesting at much lower rates than those given. The tables are, it is maintained, sufficiently accurate, however, to show that, after allowing for the price of seed and for the use of machinery, good wages for himself and teams, there is still left a fair profit to the Queensland grower, at the low price named, upon every bushel of wheat that he raises. To the credit side of the account may be added the feed for stock which the growing wheat often furnishes and the value of the straw, a considerable item.

### DAIRY AND BACON FACTORIES IN VICTORIA.

The Board have recently received from the Government of Victoria a copy of the Statistical Register of that Colony, which contains, with much other information, a statement of the number of butter and cheese factories, as well as of bacon and ham curing establishments, which were in operation in Victoria during the year ended 1st March 1895. There were 155 factories of the first-mentioned category, of which 121 were used for butter-making only, 19 for cheese-making only, whilst both butter and cheese were manufactured in the remaining 15 establishments. One hundred and forty-two of the factories were driven by steam power, six by gas, one by water, and six by manual labour. The number of persons employed at the factories was 820, of whom only 28 were females.

The total quantity of butter and cheese made at the factories and on farms during the period in question is given in the following table, which also shows the corresponding quantities made during the three preceding years.

Year.	Total Number of Fac- tories.	Quantities of Butter and Cheese made				Total for Colony.	
		At Factories.		On Farms.			
		Butter.	Cheese.	Butter.	Cheese.	Butter.	Cheese.
		lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1892	74	5,842,942	818,282	10,860,844	2,492,730	16,703,786	3,311,012
1893	109	13,189,766	946,531	10,320,079	3,110,463	23,509,845	4,056,994
1894	133	18,054,641	1,106,418	10,105,800	2,642,137	28,160,441	3,748,555
1895	155	26,703,309	2,199,869	8,876,892	1,953,262	35,580,201	4,153,131

As regards the bacon and ham curing establishments in Victoria, it appears that the number in operation on the 1st March 1895 was 26, as compared with 22 which existed in 1892. The weight of bacon and hams cured at the factories during the year 1891-2 amounted to 7,245,496 lbs., whilst the



corresponding weight for the period 1894-5 was 6,231,100 lbs., which was itself a slight increase on the previous year, so that the diminution in the products of these factories since the year 1892 has been considerable. The quantity of bacon and hams cured on the farms in 1894-5 was 2,604,138 lbs.; the total quantity cured in the Colony during the period thus amounting to 8,835,238 lbs.

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#### IMPORTATION OF CEREALS FOR STARCH MAKING INTO FRANCE.

The *Journal Officiel* of the 20th March last publishes the following Presidential Decree relative to the entry of cereals into France.

Art. 1. Grain (*blés tendres*) for the manufacture of starch may be temporarily imported free of duty under conditions set forth in the law of 5th July 1836.

Art. 2. Every 100 lbs. of corn must be represented by 55 lbs. of starch.

Art. 3. Re-exportation or storage of starch must be effected within six months.

Art. 4. Declarations of temporary importation as well as declarations of re-exportation or storage must be made in the name and on account of the manufacturers.

Art. 5. Import and Export can at present be effected only at Marseilles, Paris, and Lyons. But the Financial Minister has power to authorise such operations in other towns where there are customs establishments, if manufactories of starch have been established in such places.

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#### PROPOSED GRAIN DEPÔTS IN GERMANY.

The *Deutsche Landwirtschaftliche Presse* of the 11th April last states that a proposal has been laid before the Prussian Parliament for the extension of the railway system of that country and for the erection of agricultural grain depôts. The proposal involves the expenditure of 2,916,000*l.* for the creation of new railways and rolling stock, of 400,000*l.* in aid of light railways, and of 150,000*l.* for the construction of grain depôts, or 3,466,000*l.* in all.

The fall in the price of cereals is attributed, not only to the large quantity of foreign corn on the market, but also to the imperfect organisation of the supply and of the methods of storing the home produce in Germany; and it is with the view of remedying this latter defect, and of creating associations for the sale of corn, that the above measure is brought forward. It is stated that the usual practice of storing corn in granaries,

necessitating hand-work, as compared with the American system of elevators, which allow of the use of steam, places the German grower and seller at a disadvantage in dealing with the wholesale trade; besides which he can only offer small quantities of very variable kinds of grain, whereas the merchant can rely upon obtaining any quantity of a uniform article from abroad.

The chief merits of these proposed grain depôts are claimed to be: the greater possibility of offering a good, uniform, and easily saleable article by drying, cleaning, and grading the corn brought to the depôts; the regulation of the price by placing on the market only such a quantity of corn as will suffice to meet the actual demand (*i.e.*, by withholding a portion of the supply); the opening of a sound system of credit for the farmers to the value of the amount of the corn stored; and the cheapening of trade charges and cost of transport by selling through the medium of the depôts.

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#### AGRICULTURE IN RUSSIAN TURKESTAN.

According to the *Journal de St. Pétersbourg*, summarising an article by M. Maïew, the agricultural progress of Russian Turkestan has been very considerable during the past few years. The prosperity of this territory depends very generally upon the irrigation, and the area watered has increased from 3,707,100 acres in 1880 to 4,366,710 acres in 1893, the development being most considerable in Tashkend, where the area irrigated has more than quadrupled during the last quarter of a century (from 17,010 acres in 1868 to 76,140 acres in 1893).

Some 16,071,429 cwts. of cereals are raised in the year, but the most striking progress has been made with cotton, of which article 411,429 cwts., valued at 743,500*l.*, were obtained from 183,600 acres in 1883, as against 708,429 cwts., valued at 1,464,600*l.*, from 367,200 acres in 1893. There were, in 1895, 88 cotton factories working with American machines in the territory. Vines occupy a surface of 40,500 acres, yielding about 2,089,286 cwts. of grapes, estimated to be worth 300,000*l.* annually. 57,464 cwts. of dried fruits, valued at 40,778*l.*, were exported in 1893; while in the same year the production of silkworm cocoons amounted to 32,143 cwts.

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#### CULTIVATION AND EVAPORATION OF RASPBERRIES IN THE UNITED STATES.

According to an interesting Bulletin (No. 100) published by the Cornell University Agricultural Experiment Station, raspberries are largely grown in America. One of the most important centres of this industry is in the western part of New

York State, where large quantities of this fruit are produced, mainly for drying or evaporating, in which form it is consumed, not in New York State, but west and north-west of Chicago, chiefly in lumber and mining camps, and on the plains, where fresh fruit is scarce. Raspberries are grown for drying to an important extent in Southern Illinois and Michigan, and in Arkansas. They are not exported. Some which were exported to France met with no sale. It is stated that these dried or evaporated raspberries have as much merit in cookery as the fresh berries, and are used in the same way for pies and flavouring. Enormous quantities of raspberries are evaporated in Wayne county, New York State, which is styled the home of commercial fruit evaporation. There are reported to be 2,200 evaporators in this county. This industry has been developed during the last 25 years, and owes its beginning to the introduction of a small evaporator from Ohio, which dried five bushels of apples in eight to ten hours.

About 1,000 tons of evaporated raspberries are produced annually in Wayne county. When they were first introduced 15*d.* to 20*d.* per lb. were common prices, but these were clearly much in excess of the value of the goods. For the last three or four years the price has averaged about 8*d.* or 8½*d.* per lb. It takes about 4 lbs. of berries, on the average, to make 1 lb. of evaporated fruit. The cost of evaporating is about 1½*d.* per lb.

It would hardly pay fruit growers in England to evaporate raspberries, unless the price of the fresh fruit should fall. At present the average price made of fresh raspberries is about 2¼*d.* per lb., taking one year with another, which would make the evaporated fruit cost 10*d.* per lb. before it could be put on the market. Of course, if the price of fresh raspberries fell considerably, or if there were a glut of this fruit in any season, it might pay well to evaporate it, but so far raspberries have made fairly remunerative prices in this country.

There are five kinds of evaporators used in Western New York—kilns, horizontal evaporators, towers, steam-tray evaporators, and air-blast evaporators. The kiln is nothing more than a slatted floor under which hot air, or smoke pipes, or steam pipes are conducted. It is used for drying hops, the skins and cores of apples, and for raspberries, and even for the commercial grades of sliced apples. When raspberries and other fruits are dried in kilns, muslin is spread over the slats. In hop-growing districts of England, hop-drying kilns might be utilised for evaporating fruit, fitted up with apparatus *ad hoc*, which might be removed when the kilns were required for drying hops.

The "tower or stack" dryer far outnumbers other evaporating appliances in use in New York State. The stack is a square, chimney-like structure of wood or brick, resting on the basement of a two-story building, and extending up through the building, and projecting above the roof. A coal or wood furnace is placed



at the bottom, and air, which is drawn in from the basement, passes over the heated surface and ascends through the shaft, drying the fruit as it rises, and carrying off the vapours into the atmosphere. The fruit is spread on trays and placed in the dryer on the first floor, and, as new trays are put in, those which were first inserted are elevated in the tower. The trays finally reach the second story, by which time the fruit should be finished. The trays are then removed and emptied, and taken back to the first floor to be used again.

These "stacks" are generally built of brick. There is a "lifting device," by means of which the trays are elevated, consisting of a chain winding on an iron bar turned by a crank outside the stack or tower.

In the Williams evaporator the trays are permanently fastened to endless chains worked wholly inside the stack, and are brought back to the feeding door, for the removal of the fruit. This saves running up and down stairs with the trays, and allows the operator to inspect any tray of fruit at will, by turning the crank and bringing it back to the door.

Another "tower dryer," constructed on a different principle, is termed the automatic, in which the trays themselves fit one into another and form the stack. The entire pile, or stack, of trays is lifted by a crank, and a new tray is inserted at the bottom.

Other tower dryers are more simple, having no "lifting devices." The trays slide into slots, and may be taken out and moved higher up, or the evaporation may be controlled merely by attention to the heat and by regulating ventilation. Most machines for family use and small growers are of this kind. It is said that any one handy with tools may make a machine which will evaporate from 2 to 10 bushels per day, and thus be able to save most of the fruit about a small plantation which ordinarily goes to waste. A machine of 10 or 12 trays, 3 feet square, should evaporate 10 bushels of apples per day easily. A small stove may be used as a heater, or a brick furnace can be built.

Steam is sometimes used in kilns, but it is most efficient when applied in closed "stacks," or boxes, below the trays. For large concerns steam is held to be the most efficient and economical heat, particularly where power is wanted for driving paring, coring, ringing, and other machines, and can be easily carried to all parts of the building. Coils of steam pipe are laid in horizontal tiers, the space between them allowing the insertion of one or two trays.

Many of the evaporator buildings are remodelled from old houses, shops, or other buildings, but these are rarely so good as those built for the purpose. It is pointed out that, when building, these stacks should occupy a comparatively small part of the establishment. The room required for working and storing much exceeds that necessary for the drying towers. A building

with three towers, or stacks, which would evaporate 5,000 quarts of raspberries per day, could be built in America for less than 400%; while one with three towers, where 1,000 bushels of apples could be dried in a week, would cost 280%.

With regard to the proportion of the raspberry crop to be evaporated, it seems that this depends upon the prices obtainable for fresh fruit, and that when the prices fall below a certain level the raspberries are put into the evaporator.

The fact of there being an "efficient evaporator in any place, even though it be a very small one, has a good effect both upon the market and upon the grower. It keeps a surplus of green fruit off the market, and it informs the buyer that he must keep his price above water level or he cannot get the fruit. On the grower's part it makes him in a measure independent of the market, but more than that it leads him to save much of what is generally a waste product, such as surplus berries, windfall apples, and the like. It is unquestionable that much of the prosperity of the Wayne country and adjoining regions is attributable to the garnering evaporators which are the property of so many farms."

In the same Bulletin an account is given of raspberry culture in Western New York, which shows that the land known as good wheat, or maize, land is always suitable for the raspberry. It appears to be unnecessary to protect the raspberry stocks in the winter in Western New York, as is done in some other parts of the United States. The stocks are usually headed back when from  $1\frac{1}{2}$  to 2 feet high. It is important that this heading should be done before the canes get too high. It is a great mistake to head back raspberry plants too late, or too high, causing the laterals to start nearer the top of the cane and thereby making it top heavy.

The chief varieties of raspberries grown in Western New York are the Ohio and the Gregg. The latter, which is an abundant bearer of fine large berries, is the most suitable for evaporating. It appears that it is not profitable to let raspberry canes stand for more than four years. Growers are said to make a mistake in letting them stand just one year longer, thereby encouraging poor culture and inviting the spread of yellows, anthracnose and other "wandering guests." Land should not be planted again with raspberries in less than three or four years after the stocks have been grubbed. A good yield, when the canes are in full bearing, is 30 cwts. per acre, but it is said that the average crop in the United States one year with another does not exceed 14 cwts. per acre, which will seem to English growers a somewhat low average production.

To lessen the cost of picking, and to overcome the difficulty of getting pickers in remote places, the "berry harvesting machine" has come into use. This is a canvas tray made by stretching canvas over a light wooden frame about 3 ft. wide and 4 or 5 ft. long.

At the bottom the frame projects upwards at right angles to the body of the frame, to a distance of 5 or 6 inches, to catch the berries as they fall into the canvas. A wooden shoe, or runner, is placed on the bottom of the apparatus to allow the operator to slide it along from bush to bush. A long wire hook is used to pull the bushes over the tray, or to lift up the fallen canes, whilst with the other hand the operator deftly takes off the berries with a paddle of wood, or wire, covered with canvas, and about the size of a butter ladle. This is only used for gathering raspberries for evaporating. The berries are allowed to become fully ripe so that they fall easily, and the bushes are gone over three times. Much litter of leaves and twigs falls with the berries, but this is removed by running the evaporated fruit through a 'fanning mill.' This harvesting machine is often brought into requisition for the last pickings.

The raspberry plant in America, as in Britain, suffers from several disorders. The principal of these is "Orange rust," or yellows, caused by a fungus known as *Cæoma nitens*, which, however, exists on the plant in two stages, that of *Cæoma nitens*—the oecidium stage—and *Puccinia Peckiana*—the teleuto-spore stage. These *Puccinia* spores fall to the ground in the autumn, and are, it is believed, washed by rains down to the underground shoots, and infect these with mycelium from which the orange spores are produced in the spring. Spraying the plants with Bordeaux mixture—sulphate of copper and lime—has been found remedial to some extent, but it is recommended that infected plants should be pulled out root and branch, and burnt at once.

Anthraxnose, or "cane rust," *Glaeosporium venetum*, is a worse disorder than orange rust, infecting both canes and leaves. Small purple patches are seen upon the leaves, which soon shrivel and turn yellow and finally become brown. Purple patches are formed upon the canes, increasing in size as the canes grow, and frequently becoming confluent, and overrunning the whole of the cane. In the second year the fruit is affected, dries up, and falls off. For this fungoid attack, weak sulphate of copper and lime bouillie is effectual. It must not be used too strong, as the leaves are sensitive. It is usually applied two or three times during the season.

There is a similar fungoid affection of raspberries in Great Britain caused by a *Glaeosporium*, which would, no doubt, yield to treatment with sulphate of copper bouillies.

In this Cornell University Bulletin mention is also made of blackberry culture, which is adopted on a very large scale in America, and is as profitable, or even more profitable, than raspberry culture. Many varieties of blackberries have been obtained by selection whose fruits are very large and juicy, closely approaching the best raspberries in point of size and juiciness, while the size and number of the seeds have been much diminished. It is believed that it would pay British fruit growers to improve the blackberry as it has been improved in America, or to



import canes of improved varieties, and to cultivate it extensively. The flavour of blackberry is much appreciated in jams, jellies, and preserves, and the demand for these is steadily increasing.

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### THE MUSHROOM INDUSTRY OF PARIS.

A recently published volume of the United States Consular Reports contains detailed information on the culture of mushrooms in France. The following account is given regarding the cultivation and preserving of mushrooms in Paris, where the industry would appear to have become one of tremendous proportions, involving extensive skill and labour, and employing a capital of about 1,600,000*l*.

Mushrooms are cultivated in caves specially prepared for their growth. They grow every day in the year, each day producing a new crop or growth, though cultivators of this vegetable divide them into four seasons, which they call autumn, winter, spring, and summer beds. They are planted, or rather the beds are prepared, about three months before they begin to bear, and when once started they continuously bring forth large quantities each day, regulated more or less according to the atmosphere of the caves, which is governed by the dryness or dampness of the weather, until the soil is entirely exhausted.

Growers of this vegetable say that a mushroom bed bears daily for about three months, and at the end of the period the soil is exhausted of its substance, and new beds, which three months previously had been prepared, then begin to bear; hence it is that this vegetable is found fresh in the markets every day in the year.

One of the most interesting sights around Paris is the mushroom caves, which are nothing more or less than tunnels containing, at intervals of a few feet, small beds of horse manure mixed with virgin soil. The caves where mushrooms are grown are especially prepared, and great care and attention is given to their keeping and perfect preservation. The temperature varies but little in summer or winter, and only climatic influences, that is to say, a very dry or very wet season, more than one of heat or cold, tends to affect the daily production of the beds. The mushrooms are gathered every morning, trimmed, washed, and sorted according to size and quality preparatory to marketing. Those that are to be preserved are sent to the factories for canning, where they are again washed in salt and water, selected and separated according to quality, and then slightly cooked before being placed in tins. After the tins have been closed and soldered they are then boiled again in order that they may be more perfectly preserved. Mushrooms are never washed in salt water unless for preserving purposes.

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## DAIRYING IN DERBYSHIRE.

The fourth volume of the evidence given before the Royal Commission on Agriculture contains a report on dairying in Derbyshire by Mr. Gilbert Murray.

Mr. Murray states that during the latter part of the sixties cheese-making in Derbyshire had reached a very low point as regards quality, prices had correspondingly receded, owing chiefly to American competition; both landlords and tenants were suffering. Cheese was made for six or seven months of the year, and the cows were then dried off and remained so for a period of three or four months. No artificial food was used, and the average value of the produce of a dairy cow varied between 12*l.* on the best lands to 8*l.* on the inferior and high-lying soils.

In order to discuss and devise some practical method of improvement, the agricultural society of the county, being in touch with the landlords and tenants, was urged to call a meeting of its members and others interested in the cheese-making industry. A largely-attended and representative meeting was held in 1869; cheese-making was fully discussed, and a resolution passed to give the American system of factory cheese-making a trial. A committee was appointed, and in order to cover the preliminary expenses a guarantee fund was originated and liberally supported by the landlords and others. This support induced the committee to start a factory both in an urban and in a rural district. No time was lost in securing the services of skilled experts from America, who brought over plans of the necessary buildings and plant. One factory was started on the estate of the Hon. E. K. W. Coke at Longford, and another in the town of Derby, and these have worked continuously up to the present date. During the first two years of the experiment the committee guaranteed the suppliers a fixed price for their milk, but at the end of the second year the farmers were so far satisfied as to release the guarantors from any further responsibility as to price.

A detailed balance sheet of a small factory in the valley of the Derwent is given which shows the cost and the profit from cheese-making in 1875. From this statement it appears that the price paid for the milk was nearly 7*d.* per gallon; the cost of making amounted to 5*s.* 2½*d.* per cwt., and the average price at which the cheese sold was 75*s.* 2*d.* per cwt. of 120 lbs.

The report contains several tables of prices realised for cheese during the past 20 years. The average prices realised by a purely co-operative factory in the Peak district are stated to have been as follows:—69*s.* 2*d.* per cwt. in the five years, 1874–78; 61*s.* 2*d.* in 1879–83; 49*s.* 5*d.* in 1884–88; and 54*s.* 4*d.* in 1889–94. The average price obtained by another factory in the period 1889–94 was 55*s.* 7*d.* A list of prices obtained from one of the largest cheese factors in the Midlands is also given. From

this it appears that the prices for fine cheese during the same periods were 68s. 5d., 69s., 58s. 2d., and 60s. 10d. respectively.

Mr. Murray goes on to say that the keenest advocates of the factory system admit that under peculiarly favourable circumstances, in isolated cases, better cheese may be made in the farmhouse than is possible in a factory, but the factory pulls up the average of a district. The farmer who can make a really fine cheese will no doubt realise more money by making his cheese at home. The difficulties which beset this course are, however, numerous, and there is no certainty of uniformity from year to year.

Mr. Murray despairs of home dairying ever being able to successfully compete with butter factories or creameries. He says: "A creamery on a large scale can be started and run with a small capital, providing the tenants will take an active interest in the venture. We cannot disguise the fact that no creamery, whether worked on co-operative or on proprietary lines, will succeed unless the by-products, the separated milk and the butter-milk, can be utilised to the best advantage. No one can do this more profitably than the farmers themselves. The stock of the country is, so to speak, under the normal standard of population, and considering the earlier age at which they are now made fit for the butcher, the number cannot rapidly increase."

He strongly advocates the establishment of creameries in different districts close to a railway station, where the farmer can either deliver his new milk twice a day, at the same time taking back his proportion of the separated milk and butter-milk, or, what is better still, set up a separator on the farm and send the cream to the factory. By adopting this course the farmer has the best of all foods, fresh separated milk, on the spot either for the use of his family and servants and the rearing of young stock, or the production of pork. The cream when it arrived at the factory would be ripened and churned; the butter would be more or less sorted in accordance with the tastes of the different markets, and despatched to the wholesale or retail dealers daily. Butter made in this way would, in Mr. Murray's opinion, be superior to that of any other country, and would readily find a market at the top prices of the day.

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#### INSPECTION OF ANIMALS AND MEAT IN QUEENSLAND.

The Act entitled "Live Stock and Meat Export Act of 1895," passed by the Queensland Legislature in December, and taking effect from the 1st January last, provides for the inspection of live stock and meat intended for export from the Colony. According to this Act, no live stock or meat may be exported without a certificate from a Government inspector that it is sound and free from disease; in the case of meat, moreover, the



exporter must make a declaration that the meat submitted for export is the meat referred to in the inspector's certificate. The inspector must satisfy himself that proper arrangements have been made with respect to the accommodation, food, and water provided for live stock during the entire voyage.

Severe penalties may be imposed for attempts to evade this law. Any person exporting, or attempting to export, live stock or meat in contravention of the provisions of this Act, or of any regulations which may be drawn up for its efficient administration, is liable to a fine not exceeding 100*l*. The signing of a false certificate, or the mixing of uncertificated with certificated meat, renders the offender liable to imprisonment for a term not exceeding 12 months.

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#### AGRICULTURAL LABOUR IN APRIL.

The agricultural correspondent to the Labour Department of the Board of Trade, reporting, in the *Labour Gazette*, on the condition of agricultural labour, states that, generally speaking, employment was regular during the month of April, and that the weather was very favourable for outdoor work.

In the northern counties work was reported to be generally regular. In two poor law unions in Cumberland some slight irregularity existed in the case of oddmen, chiefly owing to the forward state of farm work. From the midland counties favourable reports were received, with only two exceptions, namely, from a union in Nottingham and another in Worcester. In the eastern counties work was generally regular in the counties of Lincoln, Norfolk, Suffolk, Essex, and Cambridge. In the latter county employment was somewhat irregular in one union. No irregularity of work was reported in the home counties except in two unions in Berkshire and two in Kent. In the southern and western counties slight irregularity of work was reported in a union in Dorset and in two unions in Cornwall. In the Rye union of Sussex there were a considerable number of men in irregular employment in certain parishes.

Seasonal advances in wages, amounting to 1*s.* a week, are stated to have taken place in April in certain districts in the following counties:—Warwick, Worcester, Oxford, Beds, Suffolk, Essex, Wiltshire, Dorset, and Gloucester. In the neighbourhood of Lincoln the advance amounted to 1*s.* 6*d.* a week, viz., from 13*s.* 6*d.* to 15*s.*

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#### SALE OF HONEY IN BELGIUM.

The Board have received copy of a Belgian decree, to take effect as from the 1st July next, defining what is to be considered as honey, and regulating the sale of this commodity.

Under this law, the denomination "honey," is to be applied solely to the substance produced by bees from the nectar of flowers or other juices gathered from plants. Honey produced by bees fed with other substances (excepting such as are supplied to them as provision for winter) must bear a denomination indicating the material given to the bees, as, for instance, "honey from sugar," "honey from glucose," or "mixed honey."

Honey substitutes and mixtures of honey with such substitutes or with other foreign substances must be denoted "artificial honey," or "honey mixed with," such and such substances; or some term not involving the word honey must be used.

The sale of honey containing more than 1 per cent. of pollen, wax, or other substances insoluble in water, or more than 0.5 per cent. of mineral matter, and all spoilt honey, is prohibited. Vessels containing honey or mixtures of honey, &c. must be labelled in such manner as to specify the exact nature of the contents, as defined by the present decree.

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#### AUSTRIAN REGULATIONS relating to the IMPORTATION of ANIMALS.

The Board of Agriculture have received a communication through the Foreign Office to the effect that consignments of animals have of late frequently arrived at Austrian frontier stations from Germany, without certificates or with defective certificates. These consignments have sometimes come from England, and only pass through Germany in transit. In order to prevent animals exported from the United Kingdom being turned back at the Austrian frontier, the Board have been asked to draw the attention of exporters, shippers, and others to the fact that the importation of horses and other live stock across the western frontier of Austria is only permitted in cases where certificates are produced showing that the animals were in good health when despatched from the place of origin. These certificates must be issued by the competent veterinary authority, and they should state the number of animals, their description, and any particular marks on them. There should also be a declaration that the animals were in good health when exported, and that, at the time of their despatch, there was no disease at the place of their origin, or in the neighbourhood, which might be communicated to other animals of the same species. Animals which are not accompanied by such certificates, or which are found suffering from any contagious disease, will be turned back at the frontier.

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## FOREIGN OFFICE REPORTS.

## AGRICULTURE IN WESTERN FRANCE.

The Board have received from the Foreign Office a copy of Mr. R. S. Warburton's Annual Report for 1895 on the trade of the Consular district of La Rochelle.

In this report it is stated that the argument, which is sometimes used, that the wheat crop of France must pay, because the area under that cereal is not diminishing, is a mistaken one, the fact being that French farmers sow wheat because they must grow something, and as yet have not been able to find anything to replace it, though many other crops have been suggested and tried. Not only do they lose on wheat-growing, but they lose heavily, and the advantage they have over British farmers in the protective duty of 12s. 3d. per quarter is counterbalanced by the much smaller return per acre.

In order to furnish some idea of the losses on wheat-growing of ordinary farmers, the financial results are quoted of the farming operations in 1895 at one of the State schools, where the land is good, and where the system of farming taught is that which produces the largest return at the lowest cost.

On this farm last year (which was a fairly good one) they grew a field of wheat of 50 acres, and their books showed a loss on the whole crop of 26*l.* 3*s.* 6*d.* The return per acre was remarkably good, comparatively, having been 24 bushels to the acre, against 14 bushels for the rest of the departement, and 18 bushels for the whole of France; the most economical system of labour was employed, and still the loss was over 10*s.* per acre.

What must it, therefore, be in the case of farms which (as many of them do) return only 10 bushels per acre, and where the labour is of the most primitive and costly description, scythes and reaping-hooks being used to cut the corn, and the winnowing done by old-fashioned hand or horse machines?

In answer to the question how farmers in France manage to hold on as well as they do, it is stated, first of all, that the expenditure for labour and living is very small, the whole work on a fairly large farm being often done by the farmer and his family, the women working in the fields as well as the men, while (with the exception of bread, which is very cheap) the farmer lives on the produce of the farm, being content to put up with a life of hardship and privation to which few working men in England could reconcile themselves. But besides this, some branches of farming have been paying better than corn-growing. Breeding and rearing stock has not been unprofitable latterly, and this is carried on by almost every farmer, however small his holding, even though he may have no grazing land, as maize



and clover is grown for summer fodder, and Jerusalem artichokes, giant cabbage, and beet, for winter feeding.

A number of small industries are also carried on, which, though separately they do not come to much, often bring in a good sum of money in the aggregate, especially on small farms. Amongst these may be mentioned, breeding and fattening pigs, combined with the preparation of bacon, sausages, &c., which sell well in the towns. The growing of fruit and vegetables, poultry rearing, which, with eggs, finds a ready sale for home use or export, are also largely practised. The rearing of poultry is usually managed by the women of the house, so that the cost is small, and most of the price obtained is profit.

Dairying is followed on even the smallest farms, and is said to be profitable with good management. There is nothing produced on a farm which can be so increased in value as dairy produce by careful and scientific handling. Butter, for instance, made in a careless and slovenly manner in country farmhouses in the district of La Rochelle, used to sell as low as 8*d.* per lb., while the same quantity of milk made into good butter now brings three times that price. This change is stated to have been caused by the establishment of large dairies, which buy up all the milk of the district from the farmers daily, at prices which give them a much better profit than when they made it into bad butter themselves. These dairies are not co-operative, but are private speculations, which are said to pay very well, while benefiting cattle-breeders at the same time; and they vary in size, according to the amount of capital which the promoter can dispose of, and the circumstances of the district, dealing with quantities of milk ranging from 2,000 to 15,000 quarts per diem. They have the advantage of not being very costly to set up and manage, compared with other undertakings connected with agriculture.

If there are buildings capable of being used for the purpose, the cost of establishing a dairy in the La Rochelle district capable of dealing with 15,000 quarts of milk daily, and provided with the best plant and machinery, is estimated at about 900*l.*, of which 450*l.* would be for the steam-engine and transmitting gear. If buildings had to be specially erected, another 400*l.* would have to be added. Such a dairy would require 50 vehicles and a proportionate number of horses to collect the milk from the farms, and if these had to be purchased the capital required would be three or four times as large, and the working expenses also much greater; but this is avoided by contracting with persons who supply the means of carriage, collect the milk and pay for it, and repay themselves by adding a small sum to the price, which is paid when delivering it at the dairy.

The milk itself is paid for at the rate of 4*d.* per gallon in summer and 4½*d.* in winter, which added to the per-centage of the collector brings it to about 4½*d.* per gallon. It is calculated that from 13 to 13½ pints of milk make 1 lb. of butter, which in

summer sells at the dairy for 1s. 4d., the milk having cost 7½d., leaving a margin for profit and expenses of 8½d. It is further estimated that the buttermilk remaining from 15,000 quarts of milk would fatten about 400 pigs per annum.

These dairies vary in size, down to those dealing with 440 gallons of milk, which is the smallest establishment for which steam-power is desirable, and below this horse or hand-power is employed.

[*Foreign Office Report, Annual Series, No. 1683. Price 1½d.*]

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#### AGRICULTURAL DISTRESS IN NORMANDY.

Mr. Frederic Bernal, Her Majesty's Consul-General at Havre, in a report on the district for the year 1895, states that in Normandy the same bitter complaints from landlords and farmers are heard as in England, but, to judge from the prices at which land is sold and rented, the pinch can hardly be as severe as it is with English agriculturists. Thus a good farm will sell at from 36l. 10s. to 40l. 10s. the acre; while the rent of a farm of from 100 to 120 acres will be from 1l. 9s. to 1l. 10s. 6d. per acre; of 50 to 60 acres, 1l. 12s. to 1l. 15s. per acre; and small farms from 1l. 18s. to 2l. 2s. per acre. These prices show a sensible reduction during the last three years, and great difficulty is experienced in getting the rents paid. As regards obligatory taxes, the farmer pays the personal tax of 3s. 7d., and a tax, which varies in different communes, of from 4 to 13 or 14 per cent. of his rent.

With respect to labour, there is stated to be a great disposition among all classes engaged in agriculture to leave the country for the towns. The daily wages of farm labourers in the heart of the country are usually 1s. for men and 7d. for women, with board and lodging. In harvest time the wages are double these amounts. The wages are higher in the immediate vicinity of towns.

[*Foreign Office Report, Annual Series, No. 1667. Price 2d.*]

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#### AGRICULTURE IN POLAND.

In a report to the Foreign Office on the trade of his district, Mr. Henry Grant, Her Majesty's Consul-General at Warsaw, states that last year's harvest was, on the whole, below the average, and prices continued to range very low. The fall in the price of corn since 1892 has been estimated by the Warsaw Bourse to have caused a loss in 1894 of 4,000,000l. to the landed proprietors in Poland.

Sheep farming, which has in the past held an important position in the agricultural industry of Poland, mostly owing to the wool produced, is stated to be in a depressed state.

Not only have the low prices which have ranged in Germany and other countries during the last few years diminished the export of Polish wool, but German and Hungarian wools have actually, as stated authoritatively, been imported into Poland in large quantities for the Polish cloth mills.

It seems that the annual Wool Fair which was held at Warsaw from the 15th to the 18th of June last, opened with a stock of 1,116 cwts. over from the previous year, to which were added 23,454 cwts. brought from the country during the Fair, being 4,108 cwts. more than in 1894. The remarkable feature of the Fair was that not a single parcel of extra-fine or fine was sold. The sales were limited to "medium-fine," the price of which ranged from 6*l.* 5*s.* 9*d.* to 8*l.* 8*s.* 4*d.* per cwt., and "medium" which fetched from 5*l.* 8*s.* 4*d.* to 6*l.* 15*s.* 5*d.* per cwt. Last year there were no sales of "medium-fine," and "medium" sold at from 6*l.* 10*s.* 4*d.* to 7*l.* 7*s.* 7*d.*

The condition of the Polish landowners and farmers is said to be most critical, and, it is feared, that unless a rise in the price of cereals takes place soon, the effect of the present depression may be disastrous, as the revenue from land generally has diminished over 50 per cent.

The substitution of a government spirit monopoly for the existing "Propinacya" (the landlord's monopoly), which is imminent, will further reduce the income of the landed proprietors. The only question now is whether the Government will give them an indemnity, and if so, how much. The general opinion is that no compensation will be given for the "Propinacya" in the country districts, but that something will be done for the landlords whose right of sale extends to the towns.

Mr. Grant says that it will be interesting to see whether any compensation will be given to the "Communes" to whom the "Propinacya" which existed on the lands handed over to the peasants in 1864, was transferred by the famous Ukase of that year. As, however, the Government will retain it in its own hands for another 11 years, for the payment of the liquidation bonds given to the landlords, the question will probably be waived for the present.

[*Foreign Office Report, Annual Series, No. 1675. Price 1*d.**]

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#### MARGARINE TRADE OF HOLLAND.

In the annual report on the trade of Amsterdam for 1895, by Mr. W. C. Robinson, H.M. Consul at that port, it is stated that the years of prosperity for the producers of margarine appear to have passed away for the present, partly in consequence of the difficulties placed by most countries in the way of the sale of artificial butter or surrogates, and partly owing to the very greatly increased importation of Australian butter into Great



Britain. The exportation of pure butter from Holland to England amounted to 191,000 cwts. in 1895 ; which shows an increase of about 50,000 cwts. as compared with 1893. The export of margarine, however, for the same year shows a decrease of nearly 30 per cent., the quantity being 879,000 cwts., against 1,230,000 cwts. in 1893. The price of margarine averaged between 1*l.* 18*s.* and 2*l.* per cwt.

[*Foreign Office Report, Annual Series, No. 1673. Price 1*d.**]

### THE SPANISH WHEAT DUTIES.

According to a memorandum prepared by Sir G. Bonham, Her Majesty's Secretary of Embassy at Madrid, the question of duties on wheat, which is of considerable importance in Spain, has been lately discussed at some length in a semi-official newspaper, the "Eco de las Aduanas," from which the following information is taken.

The matter is regarded under three aspects, viz., from the agricultural interest ; from the millowners' interest ; and from the interests of the National Treasury.

A year having now elapsed since the imposition of additional duties on wheat, flour, and bran, and the duties now standing at 2*s.* 4*d.* per bushel for wheat and 7*s.* 1*d.* per cwt. for flour, a sufficiently exact judgment may be formed of the results of that measure.

The diminution in the imports of wheat has been accompanied by a corresponding increase in the exports of flour, and that this increased export of flour is not due to foreign wheat is shown by the fact that of the 37,000 tons exported during 1895, more than 25,000 were sent from Santander, a port which is stated to be exclusively devoted to the export of home-grown wheat.

The quantities of wheat imported and of flour exported during the last three years have been as follows :—

Year.		Wheat imports.	Flour exports.
		Tons.	Tons.
1893	- -	419,000	900
1894	- -	425,000	13,000
1895	- -	203,000	37,000

It is thus seen that in 1895, as compared with the preceding year, there was a reduction of 222,000 tons of imported wheat, but an increase of 24,000 tons of exported flour ; and these amounts are stated to represent an approximate gain for Spanish agriculture of 49,000,000 pesetas (1,960,000*l.*).

The fact that foreign wheat continues to be imported at the Mediterranean ports is stated to be due to the convenient

arrangements for storage, the facilities afforded for payment, the cheapness of transport, and the fact that in Spain certain descriptions of wheat are not grown.

With respect to the question whether increased protection is advisable, it is calculated that the amount of wheat required for home consumption, for seed, and for exportation is about 1,000,000 tons, and it is a very debateable point whether the whole can be raised in Spain without unduly increasing the price.

From the millowners' point of view the question assumes a different aspect. However great the benefit would be to the agricultural interest if native-grown wheat were used exclusively in the production of flour, there is considerable doubt if this would be possible.

The difficulties already alluded to in connection with the exclusive use of Spanish wheat are greater in the case of flour production. The taste of the consumer renders necessary wheat which is at present grown only in Russia; the number of small producers renders any system of storage on a large scale difficult; and the system of ready-money payments required by the small farmer is, moreover, less convenient than payment at three months or six months date as is usual in dealings with the foreign producer.

These objections combined with the difficulty of railway transport would, according to the millowners, effectually put an end to an industry in which a large amount of labour is employed, and in which considerable capital has been sunk.

The effect of the protectionist policy on the national finances of Spain is clearly shown by the Custom House receipts from the importation of wheat, which fell from 1,363,000*l.* in 1894 to 742,000*l.* in 1895. The inevitable result of the protection afforded to native grown wheat has thus been the diminution of custom receipts, which is severely felt in the critical stage through which the country is now passing.

Wheat, which has hitherto been the principal source of revenue, compensating to a great extent for the diminution of receipts, has been gradually disappearing from Spanish ports since the Law of 9th February 1895 was put in force. It may be said that the benefits to agriculture have been conferred at the expense of the public Treasury, in the receipts of which there has been a considerable diminution.

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#### AGRICULTURE IN ALGERIA.

Sir R. Lambert Playfair, Her Majesty's Consul-General at Algiers, says, in his last annual report to the Foreign Office, that the question of agriculture is always the most important in Algeria. For years past it has had great difficulties to encounter,

but at the end of 1895 it appeared to be in a more favourable position than formerly.

At this period 205,642 Europeans and 3,276,716 natives were engaged in it, and the agricultural material in their possession was valued at 1,071,700*l.*, which was less by 15,150*l.* than during the previous year. The amount of stock in their possession is shown in the following table:—

Nature of Stock.	Belonging to—		Total Number on Dec. 31, 1894.	Comparison with 1893.
	Europeans.	Natives.		Decrease.
Horses - - -	40,740	167,797	208,537	5,380
Mules - - -	25,756	113,639	139,395	6,713
Asses - - -	12,471	262,497	274,968	15,878
Camels - - -	103	245,936	246,039	22,039
Cattle - - -	131,768	1,001,831	1,133,599	60,316
Sheep - - -	333,926	7,361,863	7,695,789	1,816,207
Goats - - -	71,218	3,296,907	3,368,125	461,615
Pigs - - -	83,685	15	83,700	2,310
Total - - -	699,667	12,450,485	13,150,152	2,380,508

This immense decrease in stock of every kind, European and native, but especially the latter, is owing to want of pasture, the result of two consecutive years of drought in portions of the Tell, and the great mortality amongst the flocks and herds of the pastoral Arabs in the High Plateaux.

The Government has undertaken extensive experiments as to the improvements which it is possible to introduce in the cultivation of cereals; but so far no conclusive result has been arrived at. It will require the experience of several years before much success in this respect can be expected.

Sheep-farming is a most important branch of Algerian agriculture, and the exportation of its products in 1894 exceeded 2,000,000*l.* in value.

The model sheep farm of Moudjebour is to be abolished, and the best merino rams there are to be sent to the various communal establishments of a similar nature, which are to be created in various parts of the colony.

[*Foreign Office Report, Annual Series, No. 1686. Price 5d.*]

#### POTATO EXPERIMENTS IN FRANCE.

In his last annual report to the Foreign Office, Mr. R. S. Warburton, Her Majesty's Consul at La Rochelle, has referred to some careful experiments in potato-growing which were carried out last summer under the direction of the Vice-President of the



Agricultural Syndicate for the Departement of the Charente-Inférieure, with the object of ascertaining the kind of potato and mode of planting which gave the largest return.

Experiments were made with a large species called "Géante bleue," and with five other varieties, which were tried in three ways, the weight of the seed being exactly the same in each case. The best results were obtained with the "Géante bleue" as shown in the following table:—

Total Weight of Seed, 128 lbs.	Weight of Crop obtained.
	lbs.
1st. By planting the largest sized tubers, weighing $10\frac{1}{2}$ ounces, whole - - - - -	835
2nd. Medium-sized tubers weighing $5\frac{1}{4}$ ounces, also planted whole - - - - -	770
3rd. Medium-sized tubers of $5\frac{1}{4}$ ounces cut up - - -	583

It is stated that the results of the whole of the experiments showed that the best return came from seed of the largest tubers planted whole. The next from medium-sized tubers planted whole, and by far the worst from cut seed.

Experiments made with *bouillie bordelaise* confirmed the conclusion deduced from the results of previous trials, viz., that no harm is done to healthy plants by dressing them with the Bordeaux mixture as a preventative of disease, provided it is properly applied. The dose of sulphate of copper and lime in the proportions generally used is not strong enough to injure the leaves, and if applied with a very fine spray, so as not to stop up their pores, no injurious results follow.

[*Foreign Office Report, Annual Series, No. 1683. Price 1½d.*]

#### AGRICULTURE IN PALESTINE.

In a recent report by Mr. J. Dickson, H.M. Consul at Jerusalem, it is stated that the harvest throughout Palestine during 1895 was a poor one, the winter rains having been scanty, and the tithes collected by the authorities from the different villages were considerably less than the amount levied the previous year. The Jewish colonies, founded through the benevolence of societies and of private individuals belonging to that community in Europe, though not altogether self-supporting, are said to be increasing in size, and are ably managed, giving occupation and subsistence to numerous Jewish immigrant families who would otherwise be destitute.

It seems that the apparent disinclination of the Jewish race to devote themselves to agriculture has hitherto been a

hindrance to the establishment and extension of these colonies unless encouraged by home support, but time and proper training will, it is believed, do much to remove this inherent prejudice.

The sowing, reaping, &c., is carried out in these colonies in accordance with the latest improvements adopted in Europe, and the colonies themselves have become like model farms to the surrounding peasantry, and will, it is expected, in course of years, produce a beneficial effect on the rural population of Palestine. That of Richon-le-Sion, which is the largest colony in this district, is occupied almost exclusively with the cultivation of the vine, and with the manufacture of wine. Large additional wine vaults have recently been built, and cuttings from the best French vines have been introduced, and are being cultivated in the colony. Already the wine made is of a very fair quality, but as more attention is devoted to its manufacture a very superior kind will ultimately be produced. In connection with the manufacture of wine, a steam factory for making casks, for driving machinery for purposes of irrigation, and for the manufacture of ice and of glass bottles, is now in full working order.

In the other colonies, such as Ekron and Petah-Tekwah, more attention is given to the cultivation of fruit trees of various kinds and the growing of crops, and large tracts of land which were formerly either marshes or lying waste have been reclaimed and are now productive. A very fair training in agriculture is afforded to Jewish youths by the agricultural school near Jaffa called Mikweh Israel, where a considerable number of pupils are boarded free of expense, and are also instructed in all the elementary branches of education. Further north, on the slopes of Mount Carmel, in an elevated and healthy locality, the large Jewish colony of Zammarin is situated, which of late years has become populous and flourishing, providing a means of livelihood to many of the Jews who had settled in the vicinity of Safed and Tiberias. Other Jewish colonies have been established in Palestine, but those mentioned above have been the most successful.

[*Foreign Office Report, Annual Series, No. 1698. Price 1½d.*]

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#### SWITZERLAND AND PROTECTION.

The Board have received through the Foreign Office a copy of a report from the Swiss Federal Council to the Federal Assembly on the subject of a petition presented by 8,900 voters, in favour of protective measures for Swiss agricultural products and for cereals in particular. The Federal Council recommends the rejection of the petition on various grounds, detailed in the report, of which the following are the most interesting:—

The first reason is stated to be that the present Swiss tariff was, on its introduction in 1891, subjected to a certain amount

of criticism as being unduly favourable to agriculture, and that any proposal to raise the duty on wheat (which is, and has been for many years,  $6\frac{1}{4}\%$  per quarter) would have entailed the rejection of the tariff. It is further pointed out that the engagements of the Swiss Government with those countries whence it derives nearly all its imports of cereals could not be altered without the risk of incurring retaliatory tariffs which would seriously affect other Swiss industries. The opinion is also expressed that the majority of the nation, when consulted by means of the Referendum, would unhesitatingly reject a proposal which might involve an increase in the price of bread. The experience of some other countries is quoted, and the probable injury to other branches of agriculture, resulting from an increased import duty on cereals, is discussed.

It appears that a joint commission of the Agricultural and War Departments of the Republic last year considered various possible methods of encouraging the production of native grain, the scheme receiving most consideration being the formation of military stores of wheat or spelt, the grain being renewed at intervals of a year or two and the old grain placed on the market. It was, however, held that, quite apart from numerous practical difficulties, such a procedure would be of no help to the Swiss agriculturist, because the class of wheat cultivated in the country was not of sufficiently good keeping quality.

It appears to have been the general opinion of the Council that the Swiss grain is generally of so inferior a quality that any rise of price which might occur in foreign countries would not materially benefit the home producer, and Swiss farmers are recommended to devote their attention to the improvement of the quality of the grain, by exercising care in the choice of seed, in harvesting and storing their crops, &c. A definite suggestion is also made that more attention should be paid to the cultivation of good barley, for which it is claimed that the price is not subject to considerable fluctuations, and for which there is always a demand for brewing purposes.

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#### AGRICULTURE IN SWITZERLAND.

The Foreign Office has recently issued a report prepared by Mr. Arthur Herbert, Second Secretary in Her Majesty's Legation at Berne, which alludes amongst other subjects to the agriculture of Switzerland.

The total area of Switzerland is 15,964 square miles, or less than half that of Ireland, and of this nearly one-third is totally unproductive. The cultivated area consists of 8,420,000 acres of meadows, gardens, &c., 3,174,000 acres of forests, and 130,640 acres of vineyards. In other words about 68 per cent. is



meadow land and pasture, 28 per cent. arable and 1·6 per cent. vineyards.

Of the arable land, half is sown in grain, and the remainder with potatoes, clover, &c. There is no fixed rotation of crops.

Animals are kept entirely on the "soiling" system (*i.e.*, stall fed) in Switzerland. The following table shows the stock the land will carry under such a system:—

Description.							In the Canton of Berne.	In the whole Country.
Horses	-	-	-	-	-	-	29,183	98,622
Mules	-	-	-	-	-	-	43	2,742
Donkeys	-	-	-	-	-	-	67	2,046
Calves under one year	-	-	-	-	-	-	105,147	472,723
Cows	-	-	-	-	-	-	142,799	663,102
Oxen and steers	-	-	-	-	-	-	10,207	76,723
Pigs	-	-	-	-	-	-	97,295	394,917
Sheep	-	-	-	-	-	-	74,562	341,804
Goats	-	-	-	-	-	-	88,703	416,323
Hives of bees	-	-	-	-	-	-	40,944	207,384

It will be seen from this table that the canton of Berne possesses one-third of all the animals in the Confederation, viz., 548,000, out of a total of 1,469,000.

The average size of the farms in the canton of Berne is about 20 acres, and most of them are freehold.

Each canton makes its own laws for the tenure of land, but as regards the canton of Berne, the only formality is a contract signed by both parties, and deposited at the Cantonal Registry Office. The fee amounts to about 7 per 1,000, and probably there is no country which offers equal facilities.

At the agricultural school at Rütli (Berne), the following amount of stock is kept on the farm of 125 acres; 40 milking cows, 20 2-year old heifers, 20 calves, 3 to 4 bulls, 7 to 8 oxen for ploughing, 6 to 8 working horses, and 30 full grown pigs, besides small ones. The average quantity of milk given by each cow is 10 litres a day (almost 3 gallons), or, by the year, 3,000 to 4,000 litres (850 to 1,140 gallons). The animals are only let out to pasture in October and November.

There are 5,500 cheese-making establishments in the Confederation, almost every village having one, which is run by the farmers themselves on the co-operative principle. In 1894 21,589,000 kilos. (21,600 tons) of cheese was exported, of a value of 1,510,000*l.*; of butter, 230,000 kilos., value at 28,440*l.* The greater part of the cheese goes to France, Germany, and Italy, and the butter to the two former. Condensed milk is also exported to the value of 760,000*l.*, nearly the whole of which goes to Great Britain; and a sort of children's food, with a

basis of milk, is also exported, one-third of which goes to England.

The farmers themselves select managers for their cheese factories, and the standard of quality being maintained, there is no difficulty in selling the produce, for the competition among the cheese and butter merchants keeps the price up. In the canton of Berne alone there are about 100 of these middlemen.

To show the attention paid to agriculture by the Government, it is stated that the budget expenditure has trebled in seven years, viz. from 49,000*l.* in 1888 to 150,200*l.* in 1895. This latter sum was divided as follows:--

	Amount.		
	Federal.	Cantonal.	Total.
	£	£	£
Agricultural schools- - - -	4,200	8,400	12,600
Aid to farmers - - - -	18,000	20,000	38,000
Improvement of stock - - -	15,000	10,000	25,000
Sundries, prizes, &c. - - -	34,800	39,600	74,400
Total - - - -	72,000	78,000	150,000

There are 16 agricultural schools, with 400 students, at 16*l.* a year each. Last year the expenditure averaged 46*l.* for each student, the difference being made up by the Cantonal and Federal subventions, amounting to 8,750*l.* and 4,300*l.* respectively.

In addition to these there were, in 11 cantons, 108 complete courses of lectures given, and also 825 separate lectures on agricultural matters, the deficits being made up by a subvention of 1,250*l.* from the Commune, 650*l.* from the Federal Government, and a similar amount from various societies interested.

The "aid to farmers" above mentioned was made on the occasion of the failure of the hay crop, when the Government purchased maize, which it resold to the farmers without profit, so as to prevent their being obliged to make forced sales of their stock.

The average price of wheat in Berne in 1894 was 20 fr. per 100 kilos., or about 35*s.* per quarter of 8 bushels of 62 lbs. Potatoes were 8 fr. per 100 kilos., or 6*s.* 8*d.* per 225 lbs. Butter was 2 fr. 30 c. to 3 fr. 20 c. per kilo., or an average of 1*s.* per lb., but it appears that the butter sent from the dairy school at Rütli to Paris averaged, delivered there, 3½ fr. per kilo., or 1*s.* 4*d.* per lb.; milk was sold at 18 c. a litre, or 6*d.* a gallon in winter, and eggs at about 10*d.* a dozen. Wages are reported to have been 3 fr. 50 c. (about 3*s.*) a day for labourers (Swiss), though Italian labour, which is equally good, is somewhat cheaper.

It is incidentally mentioned that, as in many other countries, the population of the industrial district increases, while that of the agricultural districts tends to decrease.

As regards the trade of the country, it seems that Switzerland draws every year from foreign countries half of what its population require for their support, and, on the other hand, about one-third of its produce is exported.

[*Foreign Office Report, Miscellaneous Series, No. 394. Price 1½d.*]

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## PARLIAMENTARY PUBLICATIONS.

*Board of Agriculture.—Agricultural Returns for Great Britain, 1895, showing the Acreage and Produce of Crops, Prices of Corn and number of Live Stock, with Agricultural Statistics for the United Kingdom, British Possessions, and Foreign Countries. [C.—8073.] Price 1s. 6d., with 3 diagram maps.*

The annual "Agricultural Returns," together with the various incidental and comparative information annexed to the official statistics for Great Britain, now form a volume embracing the information formerly contained in three separate Parliamentary publications, dealing with the acreage of crops and numbers of live stock, the yearly estimates of produce, and the statistics relating to the prices of corn under the Corn Returns Act. Advantage has been taken on this occasion of the later date at which the final volume has been issued to incorporate, in such cases as was possible, data relating to the imports of agricultural produce in the complete year 1895.

By means of preliminary statements all the more important statistics, the early issue of which was of interest to agriculturists, have already been placed in the hands of the public in seven successive instalments, two of them appearing in the September and March issues of this Journal. Their appearance therefore collectively in the present form is mainly intended for convenient and permanent reference, but there are some items of intelligence, such as the areas of woods and of minor crops, which are new, and, in accordance with custom, the general features of the collected tables are commented on by Major Craigie in his report to the President of the Board.

In this report, besides a reproduction of the map given in 1894 showing the groups of counties making up the several agricultural divisions of Great Britain, there appear two new diagram maps conveniently contrasting in graphic form the wheat areas of 1875 with those of 1895, when the smallest surface yet returned was shown to be under that cereal. The report also embodies the following condensed summary showing for each "Agricultural Division" not only the areas under arable land and pasture usually accounted for as cultivated, but also the estimated extent of mountain and heath land used for grazing in 1895, together with the results of a fresh enquiry just completed into the area of woodlands in Great Britain, and

with the measured surface of land and water in the several groups. This table may be reproduced as under :—

DIVISIONS.	Total Area of Land and Water.	Returned as under Woods and Plantations.	Approximate Area of Mountain and Heath Land used for Grazing.	Perma-ment Pastures.	Arable Land.
ENGLAND :	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
I.—Eastern and North-Eastern Counties.	7,410,000	232,000	70,000	1,962,000	4,312,000
II.—South-Eastern and East Midland Counties.	7,215,000	593,000	118,000	3,053,000	2,612,000
III.—West Midland and South-Western Counties.	8,111,000	455,000	329,000	3,331,000	2,561,000
IV.—Northern and North-Western Counties.	9,808,000	386,000	1,587,000	4,399,000	2,115,000
WALES: V. - - -	4,774,000	182,000	1,099,000	1,979,000	860,000
SCOTLAND :					
VI.—Eastern Counties -	6,545,000	457,000	2,127,000	521,000	2,174,000
VII.—Western Counties	12,909,000	421,000	7,276,000	866,000	1,333,000
GREAT BRITAIN - - -	56,772,000	2,726,000	12,606,000	16,611,000	15,967,000

Details are given of the produce of the crops, and the harvest of 1895 is contrasted with the average of those of the preceding years for which estimates are available. Taking the figure “100” to represent this average, the results of the past three years compare as follows:—

Year.	Wheat. — 29·32 Bushels per Acre = 100.	Barley. — 33·02 Bushels per Acre = 100.	Oats. — 38·21 Bushels per Acre = 100.	Potatoes. — 5·82 Tons per Acre = 100.	Hay (Clover). — 28·22 Cwts. per Acre = 100.	Hay (Permanent Grass). — 23·86 Cwts. per Acre = 100.
1893	89	93	93	113	66	53
1894	105	104	109	95	115	120
1895	89	96	97	114	96	80

In the section dealing with prices the official data for corn in the year 1895 are discussed, and the average values of wheat, barley, and oats over complete and successive five years' periods is contrasted in tabular form; the comparison is made for the whole period over which the ordinary agricultural returns have been collected. The first quinquennium, 1866–70, gives wheat a mean price of 54s. 8d., barley, 38s. 11d., and oats, 25s. 6d.,

against 27s. 11d. for wheat, 25s. 3d. for barley, and 18s. for oats as the mean prices of the five years 1891-95 inclusive. It is shown that three fourths of the decline in wheat prices, and still more in those of barley and oats, occurred in the last 15 years of the 30 under review.

Similarly, although only with the aid of the looser and more imperfect records available, the average price of beef in the Live Cattle Market of London was quoted at 49s. to 74s. 8d. per cwt., and at the Dead Meat Market, 43s. 2d. to 65s. 4d. in 1866-70; while for the last five years the prices similarly averaged show 38s. 6d. to 65s. 4d. per cwt. at the Live Cattle Market, but 28s. only to 58s. 4d. at the Dead Meat Market, a much greater drop in the lower than in the higher grades, and following a lowering of average import values of foreign and colonial beef from 57s. 3d. per cwt. in 1866-70, to 41s. 2d. per cwt. in 1891-95.

The recent course of agricultural imports is also briefly commented upon in the report, and illustrated in the tables appended. The statistical details of home and foreign agriculture which fill this volume will be found to cover 110 complete tables. Several of these give on this occasion information extended or differently presented from the statistics of previous years, while in one or two instances, such as Argentina, Bulgaria, Spain, and Uruguay, new returns have been secured, although in most cases these official communications relate to dates considerably more remote than those which are annually brought under attention for Great Britain.

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*Swine Fever.—Report of the Departmental Committee appointed by the Board of Agriculture to inquire into the Etiology, Pathology, and Morbid Anatomy of Swine Fever.*  
[C.—8023.] Price 5d.

Under the authority of a Treasury letter, dated the 7th of February 1895, a Departmental Committee was appointed by the Board of Agriculture (a) to review the experience gained since the Swine Fever Act of 1893 came into operation, respecting the etiology, pathology, and morbid anatomy of the diseases classed as swine fever; (b) to supplement that experience by a series of experiments as to the bacteriology and life history of these diseases, and as to their communication, either directly or indirectly, from animal to animal; and (c) to bring together the results of the work of foreign investigators.

With this object in view, the Committee directed that experiments should be conducted bearing on the etiology, pathology, and morbid anatomy of swine fever, and they also instituted a series of observations on the clinical aspects of the disease, which



now enables them to report definitely on certain important points which, at the commencement of the inquiry, were still undecided.

In accordance with the instruction referring to the work of foreign investigators on the subject of swine fever, the Committee have consulted all the available literature, and have been in correspondence with some of the chief experts who have devoted themselves to the study of the contagious fevers of the pig.

A digest of the views of different investigators is contained in the appendix to the Report. The Committee cannot escape the conviction that the opinions expressed in reference to the pathology and bacteriology of swine fever are so divergent that it is hopeless to attempt to reconcile them. They therefore deemed it expedient to act independently.

The Committee desire in the first place to state their belief that there is no room for the slightest doubt that the sole cause of swine fever is the introduction into the animal system of the specific organism derived from a previous case of the disease.

Swine fever does not, and cannot, arise under any conditions which exclude the specific virus; in other words, it is not a sporadic disease, but one of the true contagia, being in this respect in the same category as small-pox, cattle-plague, and other contagious diseases of man and animals.

Swine fever may be defined as a contagious and infectious disease of the pig associated with a necrotic and ulcerative condition of the mucous membrane of the intestine, the morbid condition being nearly always most marked in the large intestine.

The disease of the lungs which occasionally accompanies the disease in the intestine is either collapse or pneumonia. It is necessary, however, to observe that in none of the experiments performed for the Committee was pneumonia produced either by inoculation with pure cultivations of the micro-organism, or by feeding with the natural material obtained from animals suffering from swine fever.

Some very important information in regard to the obscure form of swine fever was obtained by the Committee from the examination of swine which had been isolated for a period of two months on infected premises. At the end of that time they had been certified by a veterinary surgeon to be free from swine fever, and would in the ordinary course have been released. In several of these instances, instead of being released, the swine were, at the request of the Committee, slaughtered, and the organs sent for examination. In each set of specimens characteristic lesions of swine fever were detected.

It was found that animals placed in contact with the diseased swine, or in the sties which had been occupied by them, became affected with a similar type of slowly progressive disease. On post-mortem examination of all the original cases the remarkable feature was the great disproportion between the very advanced

lesions in the digestive canal and the slight symptoms of disease exhibited by the animals during life.

An important question arose as to the probability of swine affected with the obscure form of the disease being sent to large slaughter-houses and bacon factories for slaughter. This apprehension has been, however, set at rest by the inquiry which the Committee directed to be made in different parts of the kingdom. For this work veterinary surgeons were selected on account of their experience and knowledge of swine fever, and they were instructed to forward, for the inspection of the Committee, all specimens in which they found indications of swine fever.

In the course of their inquiry, altogether 13,783 specimens were examined, and in none of the specimens forwarded were any swine fever lesions detected. Indeed, taking into account the fact that in nearly all cases of chronic disease the animals, although not exhibiting any characteristic signs of swine fever, are in poor condition and totally unfit for the butcher, it is not probable that they would be sent for slaughter. There is still, however, ground for suspecting that they may be sent to markets and sales as store pigs, and it is a well-known fact that a very large number of outbreaks have been traced to swine recently purchased at public sales.

In reviewing their work for the year, the Committee find that the following very important facts have been established :—

- (1.) Bacteriological investigations prove that the cause of swine fever is a specific microbe.
- (2.) Experience and observation prove that swine fever (both in its acute and chronic forms) is communicable from diseased to healthy swine by contact, and also by the agency of persons, animals, and substances which are capable of conveying the infective matter.
- (3.) It has been shown that the pronounced symptoms which have hitherto been looked upon as essential to a correct diagnosis, are not always present in the early stage of swine fever, and are constantly absent in the chronic form of disease.
- (4.) The Committee regard it as an important outcome of the study of the morbid anatomy of the disease that some animals undoubtedly infected with swine fever, presented only minute erosions in the intestinal canal, and that other animals, which had been suffering from either the acute or the chronic form of the malady, but which had recovered, showed only depressed scars which were apt to be overlooked at any but a very thorough post-mortem inspection.
- (5.) From the experimental evidence it is concluded that a condition of plugging of the crypts on the ileo-cæcal valve cannot be accepted as an indication of swine-fever.

*Board of Agriculture.—Annual Report of Proceedings under the Tithe Acts, the Copyhold Acts, the Inclosure Acts, the Metropolitan Commons Act, the Drainage and Improvement of Land Acts, the Universities and College Estates Acts, the Glebe Lands Act, 1888, &c., &c., for the Year 1895.* [C.—8009.] Price 2d.

Under the Tithe Acts the Board received in 1895 a total of 493 applications for redemption, besides 181 applications for altered apportionments of rentcharge. 135 applications relating to other branches of tithe business were also received.

Under the Copyhold Acts, 275 enfranchisements were completed by the Board in 1895, and proceedings in 248 other cases had been commenced. Orders of exchange of lands were confirmed in 31 cases in the year.

The Board had under consideration two applications for provisional orders under the Inclosure Acts, one being for the regulation of Darwen Moor, Lancashire, and the other for the regulation of Great Langdale Common in Westmorland. Four provisional orders were confirmed by Parliament.

For the convenience of the public the Ordnance Survey maps of Great Britain and Ireland on the scale of one inch to the mile and those of Great Britain on the scale of six inches to the mile are now kept at the offices of the Board at 3, St. James's Square, S.W., and are available for inspection without charge.

Upon both series of these maps the county and parish boundaries are shown, and upon the six-inch scale maps the boundaries of the Parliamentary and the various local government districts are also marked. Upon another series of maps the boundaries of petty sessional divisions are recorded. These will also be revised as the information is received from the clerks of the peace.

*Board of Agriculture. Diseases of Animals Act, 1894. Further Papers and Correspondence relating to the Landing in Great Britain from Canada of Cattle affected with Pleuro-Pneumonia.* [C.—8025], Price 5d., and [C.—8050.] Price 1½d.

These volumes are in continuation of Parliamentary Papers C.—7123 and C.—7366 and C.—7496. They contain the official correspondence that has been exchanged on the subject between the 16th August 1894 and the 14th April 1896, and which refers to a considerable extent to the prohibition of the importation of Canadian cattle into Belgium.

Copies are printed of two despatches, and their enclosures, from the Governor-General of Canada, criticising the grounds upon which the Board of Agriculture arrived at their decision to prohibit the importation of live cattle from Canada into this country, except for slaughter at the port of landing.



The explanation of the position as affected by the proposals contained in the Diseases of Animals Bill, 1896, is given by the Board, who further suggest that the long-standing controversy should be brought to a close by the development of the cattle trade on the lines laid down in the above-mentioned Bill.

The second publication [C.-8050.] contains further protests from Canada, and a communication from the Board stating that the Diseases of Animals Bill is absolutely essential for security against the risk of the introduction of disease into the United Kingdom.

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*Science and Art Department.—Return showing the extent to which, and the manner in which, Local Authorities in England, Wales, Scotland, and Ireland are applying Funds to the purposes of Technical Education (including Science, Art, Technical, and Manual Instruction.)*  
[C.—7788.] Price 1s. 4d.

In a prefatory note to this return it is stated that in its compilation from the information furnished by local authorities in the United Kingdom, an endeavour has been made to show as completely as possible the extent to which those authorities have availed themselves of the provisions of the several Acts of Parliament empowering them to raise and contribute funds for the purposes of technical education. Thus in the case of England and Wales, particulars are given not only of the application of funds to educational purposes by the councils of counties and county boroughs (as in previous returns), but also of the expenditure on technical education by town councils of boroughs and by urban district councils out of the local rates, including funds voted for the building or maintenance of science and art schools or museums out of the rate levied under the Public Libraries' Acts. No expenditure under the latter head has been incurred in Scotland during the two years covered by the Return—viz., 1893-94 and 1894-95, but—in addition to the usual information as to the application of the residue grant under the Local Taxation (Customs and Excise) Act, 1890, to technical education in that country—a statement is included showing the expenditure by school boards, out of the school fund, under the Technical Schools (Scotland) Act, 1887. Furthermore, particulars are given of the expenditure on technical education by local authorities in Ireland out of rates raised under the Technical Instruction Acts and the Public Libraries' Acts.

The return shows that the total amount expended on technical education during the year 1893-94 in England, Wales, Scotland, and Ireland was 647,631*l.* 18*s.* 7*d.*; and that the estimated total expenditure on technical education for the year 1894-95 was 737,420*l.* 15*s.* 1*d.* These amounts are exclusive of the sums devoted to intermediate and technical education under the Welsh Intermediate Education Act, 1889.

*Agricultural Statistics, Ireland, 1895. Report and Tables relating to Migratory Agricultural Labourers; showing their distribution in Ireland when at home; their relative proportion to the population; their social position when at home as measured by the extent of their holdings, if any; their destination; and the number who left the several ports from 1st January to 31st August 1895. [C.—7957.] Price 2½d.*

It appears from this report that in June last there were 14,119 persons, or 3·0 per 1,000 of the population, according to the Census of 1891, who had either left or intended to leave their homes in Ireland to seek employment as agricultural labourers elsewhere; of these, 3,183 had not left their homes at the time of the enumeration. The corresponding number for 1894 was 15,615, showing a decrease of 1,496 in the present year.

Of the total number thus enumerated 82·0 per cent. sought work in England, 15·6 per cent. in Scotland, and 2·4 per cent. in Ireland.

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*Agricultural Statistics, Ireland.—General Abstract of Forestry Operations in Ireland, during the Year ended 30th June 1895.*

Among the many interesting particulars contained in this publication it is stated that during the period of 1851–95 there were some slight fluctuations in the acreage under woods and plantations in Ireland.

The following summary is given of the acreage under each kind of tree (exclusive of detached trees) in 1895, distinguishing the periods in which the trees were planted:—

Period in which Planted.	Oak.	Ash.	Elm.	Beech.	Fir.	Mixed.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Previous to 1791 -	22,784	2,677	497	939	1,612	76,587	105,096
1791–1800 - -	1,493	927	135	384	1,243	22,399	26,581
1801–1810 - -	1,327	639	134	342	2,691	31,087	36,270
1811–1820 - -	1,393	479	131	279	5,496	42,878	50,856
1821–1830 - -	1,342	442	140	730	7,684	51,456	61,794
1831–1840 - -	1,197	628	330	600	6,513	55,689	65,007
	29,536	6,942	1,417	3,274	25,239	280,096	345,604

It appears that 1,243 statute acres were planted with trees in Ireland during the year ending 30th June last, the total number of trees amounting to 2,128,652. Larch, fir, pine, and spruce were the trees chiefly planted.

The number of trees felled both for clearance and for thinning plantations during the same period amounted to 537,101, the area returned as cleared being 809 acres.

Of the 537,101 trees felled, 149,585 were used for "propping," which appears to have been the chief purpose to which the timber of almost all descriptions was applied. As regards the disposal of 85,066 of the trees felled the only information obtained is that they were "used locally," and 152,900 were "exported."

*Agricultural Statistics, Ireland. Tables showing the Extent in Statute Acres and the Produce of the Crops for the Year 1895, and other Information. [C.—7956.] Price 3½d.*

This publication shows the area and yield of the several crops in Ireland in 1895 compared with those of 1894 to have been as follows:—

In wheat there was a decrease of 12,806 acres, or 26·0 per cent.; in oats a decrease of 38,436 acres, or 3·1 per cent.; in bere a decrease from 176 to 139 acres; and a decrease of 406 acres, or 3·4 per cent., under rye; with an increase of 7,055 acres, or 4·3 per cent., in barley. In green crops, potatoes decreased by 6,604 acres, or 0·9 per cent.; turnips increased by 1,971 acres, or 0·6 per cent.; and mangel wurzel and beet root increased by 988 acres, or 1·9 per cent. Of other crops—flax decreased by 5,878 acres, or 5·8 per cent.; meadow or clover, sainfoin, and grasses under rotation decreased by 5,472 acres, or 0·9 per cent.; while meadow on permanent pasture or grass not broken up in rotation increased by 17,350 acres, or 1·1 per cent.

Compared with the average acreage for the 10 years 1885–1894, turnips increased by 13,399 acres, or 4·5 per cent.; mangel wurzel and beet root by 7,533 acres, or 16·6 per cent., and hay by 61,642 acres, or 2·9 per cent. Wheat shows a decrease of 38,419 acres, or 51·3 per cent., compared with the average; in oats there is a decrease of 48,754 acres, or 3·9 per cent.; in barley a decrease of 3,169 acres, or 1·8 per cent.; the area under bere declined from 326 acres to 139 acres; rye decreased 1,080 acres, or 8·6 per cent., and flax decreased 5,233 acres, or 5·2 per cent. Potatoes also decreased by 59,600 acres, or 7·7 per cent.

The average yield per acre of cereal crops in 1895, compared with 1894, exhibits a decrease in wheat of 0·3 cwt., in oats of 0·4 cwt., and in barley of 0·5 cwt., while there is an increase in bere of 0·8 cwt., and in rye of 0·7 cwt. In other crops—potatoes show an increase of 2·3 tons, turnips of 0·6 ton, mangel wurzel and beet of 1·0 ton, while flax shows a decrease of 13·5 stones. Hay from clover, sainfoin, and grasses under rotation shows a decrease of 0·5 ton, and hay from permanent pasture or grass not broken up in rotation, a decrease of 0·3 ton. The rates for 1895 compared with the average rates for the ten years 1885–1894



show for cereal crops an increase in wheat of 0·8 cwt., in oats of 0·7 cwt., in barley of 0·3 cwt., in bere of 0·5 cwt., and in rye of 0·8 cwt. In other crops there is an increase in potatoes of 1·4 tons, in turnips of 1·2 tons, and in mangel wurzel and beet root of 1·5 tons, while there is a decrease in flax of 8·1 stones. The rate for hay is the same as the average. The increase in the produce of potatoes per acre, as compared with the average rate for the preceding 10 years is equal to an increase of 40 per cent., and the decrease in the yield per acre of flax is equivalent to a decline of 28 per cent.

The total produce of wheat in 1895 was 594,027 cwts., being 27·6 per cent. under the produce for the preceding year, and 49·0 per cent. under the average for the 10 years 1885-94; the total quantity of oats was 18,221,202 cwts., being 5·5 per cent. under the produce in 1894, but 1·1 per cent. over the average for the 10 years 1885-94; the quantity of barley was 2,845,172 cwts., being an increase of 1·2 per cent. as compared with the return in 1894, but 0·2 per cent. below the average for the 10 years 1885-94; bere yielded 1,939 cwts., against 2,307 cwts. in 1894, and an average of 4,384 cwts. for the 10 years 1885-94; and the produce of rye was 153,867 cwts., being 1·4 per cent. above that for the preceding year, but 2·7 per cent. below the average for the 10 years 1885-94.

The total produce of potatoes was 3,472,015 tons, being 85·4 per cent. above the yield in 1894, and an increase equivalent to 27·9 per cent. as compared with the average produce for the 10 years 1885-94. The turnip crop was 4,490,559 tons, being 4·9 per cent. over the produce of 1894, and 14·3 per cent. above the average for the 10 years 1885-94; and the total quantity of mangel wurzel and beet root was 827,669 tons, being 9·2 per cent. more than in 1894, and 29·0 per cent. over the average for the 10 years, 1885-94.

The yield of flax was 12,193 tons, being 43·3 per cent. under the produce in 1894, and 32·1 per cent. below the average quantity for the ten years 1885-94.

The produce of hay from clover, sainfoin, and grasses under rotation was 1,156,389 tons, showing a decrease equal to 22·6 per cent. as compared with the quantity in 1894, and the quantity of hay from permanent pasture and grass not broken up in rotation was 3,405,685 tons, or 10·7 per cent. below such produce in 1894. The aggregate quantity of hay under both headings (4,562,074 tons) is 747,290 tons, or 14·1 per cent. under that for 1894, but shows an increase equivalent to 0·4 per cent. as compared with the average produce for the ten years 1885-94.

Of the acreage under each variety of potato grown in Ireland, 77·7 per cent. consisted of champions, leaving only 22·3 per cent. for all other varieties—the per-centage of some of them being so small as to be barely appreciable when put into figures. The proportion of champions planted in Ireland, which

has practically been the same for many years past, now shows a slight tendency to decline.

According to the Returns there would appear to have been a decrease of 5·4 per cent. in the quantity of honey produced in 1894, as compared with the preceding year, the returns for which showed an increase of 29·0 per cent. as compared with the quantity in 1892.

The quantity of honey produced was 234,838 lbs.; of which 129,825 lbs. were produced "in hives having movable combs," and 105,013 lbs. "in other hives." It was stated that 112,331 lbs. was "run honey," and 122,507 lbs. "section honey."

The number of stocks brought through the winter of 1894-95, amounted to 17,317; of which 7,810 were in hives having movable combs, and 9,507 in other hives.

According to the returns collected there were 4,949 lbs. of wax manufactured in 1894; of which 1,893 lbs. were from hives having movable combs, and 3,056 lbs. from other hives.

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*Inspectors of Meat.* [H.C.—74.] Price 1½d.

A Return showing the number of officials employed as Meat Inspectors in London, Liverpool, Manchester, Birmingham, Bolton, Birkenhead, Bradford, Blackpool, Hull, Nottingham, Derby, Portsmouth, Glasgow, Edinburgh, Dundee, Paisley, Perth, and Greenock; date of their appointment; qualifications for appointment; vocation prior to receiving appointment; and whether such officials act as Meat Inspectors only, or hold any office of emolument in a Department other than that supervised by the Medical Officer of Health.

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*Agricultural Produce (Ireland).* [H.C.—136.] Price ½d.

A return of the average prices of agricultural produce in Ireland, as collected by the Irish Land Commissioners, year by year, from 1881 to 1895 inclusive. The figures given in this publication show a fall in price, except in the case of potatoes, as regards every commodity to which reference is made. The most notable diminutions are as follows, the figures quoted referring to the average price in 1881 and 1895 respectively: wheat, 9s. 5d. to 5s. 9d. per cwt.; butter, 5l. 8s. 4d. to 4l. 7s. 5d. per cwt.; pork, 2l. 12s. 3d. to 1l. 18s. 11d. per cwt.; and flax, 6s. 11d. to 5s. 6d. per 14 lbs.

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*Royal Commission on Tuberculosis. Minutes of Evidence and Appendix. [C. 7992.] Price 7s. 3d.*

This volume contains the Minutes of Evidence given before the Royal Commission between 10th October 1890 and 15th December 1890, together with reports on three special inquiries. The first of these reports is by Professor McFadyean, Principal of the Royal Veterinary College, on the experiments and observations made by him as to the means of recognizing tuberculosis in animals during life. Another report is by Dr. Sidney Martin, Assistant Physician to University College Hospital, as to food of tubercular origin, and its infectivity to lower animals. The third inquiry was by Dr. Sims Woodhead, Director of the Laboratories of the Royal Colleges of Physicians and Surgeons, to determine how far cooking processes destroy the infectivity of tubercle. The volume contains numerous plates illustrative of these reports.

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*Royal Commission on Agriculture: Second Report. [C.-7981.] Price 6d.*

This volume is the Second Report of the Commissioners appointed to inquire into the agricultural depression prevailing in Great Britain and whether it can be alleviated by legislation or other measures. The report consists of two parts, Part I. being the report of the majority, while Part II. constitutes the minority report, and there are also two separate reports by individual Commissioners.

The subjects dealt with in this publication are the burdens on land and loans for agricultural improvements, the former including the land tax, imperial taxation generally, and local taxation. In the report of the minority the incidence of the tithe is also discussed.

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## IMPORTS OF AGRICULTURAL PRODUCE.

I.—STATEMENT showing the NUMBER of ANIMALS imported into GREAT BRITAIN from IRELAND during the first Four Months of the year 1896, compared with the corresponding periods of 1895 and 1894.

Animals.	Four Months ended 25th April 1896.	Four Months ended 27th April 1895.	Four Months ended 28th April 1894.
Cattle - - - - -	176,934	179,054	193,230
Sheep - - - - -	43,763	34,946	51,563
Swine - - - - -	257,040	254,977	221,641
Goats - - - - -	772	961	2,200
Horses - - - - -	10,904	6,841	9,233

II.—STATEMENT showing the QUANTITY of HAY imported into the UNITED KINGDOM from the under-mentioned Countries during the first Four Months of the year 1896, compared with the corresponding periods in 1895 and 1894.

*(Furnished by the Board of Customs.)*

Countries whence Exported.	Four Months ending 30th April 1896.	Four Months ending 30th April 1895.	Four Months ending 30th April 1894.
	Tons.	Tons.	Tons.
Algeria - - - - -	2,318	3,576	190
Canada - - - - -	1,072	1,784	5,958
France - - - - -	7,859	3,446	1,753
Holland - - - - -	9,303	1,711	6,762
United States - - - - -	1,264	15,341	84,093
Other Countries - - - - -	10,759	1,342	36,528
Total - - - - -	32,580	27,200	135,289

III.—STATEMENT showing the QUANTITIES of CERTAIN ARTICLES of AGRICULTURAL PRODUCE IMPORTED into the UNITED KINGDOM in the Four Months ending 30th April 1896, and in the corresponding periods in 1895 and 1894.

(Compiled from the Trade and Navigation Returns.)

Articles.	Four Months ending April 1896.	Four Months ending 30th April 1895.	Four Months ending 30th April 1894.
Horses - - - - - No.	13,587	7,339	5,448
Cattle - - - - - "	181,493	96,100	123,485
Sheep - - - - - "	301,996	285,344	67,166
Bacon - - - - - cwts.	1,459,863	1,422,291	1,258,415
Beef:			
Salted - - - - - "	83,551	75,819	75,985
Fresh - - - - - "	798,933	644,229	661,118
Hams - - - - - "	408,174	376,862	350,336
Meat unenumerated:			
Salted or fresh - - - - - "	163,836	98,977	70,921
Preserved, otherwise than by salt- ing - - - - - "	239,888	229,377	162,901
Mutton, fresh - - - - - "	1,050,042	799,076	603,647
Pork:			
Salted (not Hams) - - - - - "	91,739	75,696	76,586
Fresh - - - - - "	96,313	100,846	73,212
Rabbits - - - - - "	49,535	39,103	37,228
Butter - - - - - "	1,060,244	1,036,367	898,603
Margarine - - - - - "	322,935	326,328	433,975
Cheese - - - - - "	472,867	440,935	353,794
Milk, condensed or preserved - - - - - "	184,293	175,659	185,110
" and cream, fresh - - - - - gallons	3,791	113,688	67,869
Eggs - - - - - gt. hundreds	3,389,786	3,159,193	3,766,491
Corn:			
Wheat - - - - - cwts.	20,516,560	23,311,575	17,178,872
Wheat Meal and flour - - - - - "	7,721,090	5,824,560	5,597,382
Barley - - - - - "	6,162,950	6,240,467	9,696,082
Oats - - - - - "	3,679,800	3,760,159	3,783,172
Maize - - - - - "	16,672,520	9,664,280	11,779,138
Fruit:			
Apples - - - - - bushe's	861,264	1,239,003	751,678
Pears - - - - - "	2,565	14,088	13,451
Hops - - - - - cwts.	86,452	92,884	52,085
Onions - - - - - bushels	1,727,307	1,751,961	1,570,368
Potatoes - - - - - cwts.	176,650	1,270,091	104,944
Tallow and Stearine - - - - - "	821,906	674,011	539,413
Poultry and game - - - - - value £	301,548	251,407	169,005
Vegetables (unenumerated) - - - - - "	349,560	266,005	208,657

## PRICES OF LIVE STOCK AS RETURNED UNDER THE WEIGHING OF CATTLE ACT.

The returns of prices under the Markets and Fairs (Weighing of Cattle) Act, 1891, for the first three months of 1896 are now available. The detailed particulars embraced in the statements rendered to the Board of Agriculture have been somewhat reduced, with a view to facilitate the task of the market authorities and auctioneers in collecting the data required respecting the actual number of animals entering, the number weighed, and the prices current at the markets or auction marts of the 19 places scheduled by the statute. It is satisfactory to observe that the numbers of cattle whereof the live weight was ascertained, and the current prices per live stone or live cwt. calculated, show an increase over those of the similar quarters of 1894 and 1895, although the total number of cattle entering the scheduled places was considerably reduced.

The comparison stands as under:—

Animals.	1st Quarter, 1896.	1st Quarter, 1895.	1st Quarter, 1894.
<b>CATTLE :</b>	No.	No.	No.
Entering markets - - -	260,823	271,648	282,562
Weighed - - - - -	26,190	24,771	22,587
Prices returned - - -	23,709	22,211	20,353
Prices returned with quality distinguished.	17,916	16,818	13,978
<b>SHEEP :</b>			
Entering markets - - -	738,502	710,865	895,871
Weighed - - - - -	10,116	7,703	8,193
Prices returned with quality distinguished.	8,881	5,279	5,197
<b>SWINE :</b>			
Entering markets - - -	61,745	57,508	41,429
Weighed - - - - -	740	345	555
Prices returned - - -	308	232	86
Prices returned with quality distinguished.	308	4	11

Judging from these data, it would seem that the practice of weighing swine, which has hitherto been comparatively rare, is beginning to make way; the total weighed being twice the number in the same three months of 1895. As the general table appended shows, however, the weighing of swine is reported from three markets only—Leeds, Newcastle, and Perth—and as yet only at the last two places have prices been returned.



As regards sheep, a larger number are reported to have been weighed, and a very considerable advance is apparent in the number of cases where prices have been ascertained, chiefly, however, in Scotland; for in London, where 1,139 sheep were weighed, the market authority, while finding itself in a position to send satisfactory returns of prices of cattle, has only been able to report the prices of sheep in 23 instances.

As pointed out in former notices of these returns, the weigh-bridge is much more largely used for cattle than for either sheep or swine, but despite the advance above noted, the total number of cases reported is still relatively small. The increase of the present quarter appears both in England and in Scotland; but, as the subjoined figures show, the proportion of weighed cattle in England to the whole number in the markets does not yet reach  $3\frac{1}{2}$  per cent., and it is only for about two-thirds of the weighed animals that prices have been reported in the prescribed form. The comparison with the first quarters of 1895 and 1894 is as under :—

Cattle at Scheduled Places in England.	1st Quarter, 1896.	1st Quarter, 1895.	1st Quarter, 1894.
Number entering markets - - -	201,403	210,777	221,839
Number weighed - - -	6,992	6,237	5,509
Prices returned with quality distinguished.	4,747	3,709	3,288

From seven of the fourteen English towns the information continues to be very unsatisfactory. Bristol returns no animals at all as weighed, and very few are reported from Ashford, Birmingham, Lincoln, Norwich, Wakefield, or York.

In Scotland, on the other hand, nearly a third of all the cattle accounted for have their weights reported, and the prices of nearly all of these are supplied, although the inability of one of the firms of auctioneers to obtain the particulars as to quality has reduced the Scotch quotations of prices to some 68 per cent. of the animals weighed. The returns stand as under :—

Cattle at Scheduled Places in Scotland.	1st Quarter, 1896.	1st Quarter, 1895.	1st Quarter, 1894.
Number entering markets - - -	59,420	60,871	60,723
Number weighed - - -	19,198	18,534	17,078
Prices returned - - -	18,962	18,502	17,065
Prices returned with quality distinguished.	13,169	13,109	10,690

Omitting the quotations of prices which are distinguished as those of store cattle, and adding, as may now be done, Leeds to the number of English markets hitherto specified as having a sufficient number of reports of the sales of fat stock to provide an average quotation, the averages for the first quarters of 1896 and 1895 contrast as follows in the undernoted places :—

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1896.	1895.	1896.	1895.	1896.	1895.
<b>ENGLAND:</b>	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Leeds - -	26 0	—	29 4	—	32 0	—
Liverpool -	—	—	28 8	27 8	33 0	33 10
London - -	27 8	29 4	33 8	34 0	37 4	37 6
Newcastle-on-Tyne.	26 4	—	31 0	32 8	33 4	34 2
Shrewsbury -	25 4	—	29 10	—	33 8	—
<b>SCOTLAND:</b>						
Aberdeen -	23 6	24 8	31 6	31 6	34 6	35 6
Dundee - -	24 10	26 2	31 0	31 8	32 8	33 8
Edinburgh -	24 8	—	32 2	33 6	33 2	34 0
Glasgow -	—	—	32 4	—	34 8	—
Perth - -	29 6	29 8	31 2	32 0	32 8	34 10

Where quotations are given for each quarter in the lowest or inferior grade of stock, the prices per cwt. seem in each case lower than those supplied last year. Second quality cattle are also generally lower in price. In this grade, the first quarter of 1896 shows prices varying from 28*s.* 8*d.* per cwt. in Liverpool to 33*s.* 8*d.* in London. The variations between markets were much less in the five Scotch towns quoted, or from 31*s.* per cwt. at Dundee to 32*s.* 4*d.* at Glasgow.

In the case of Prime cattle in the highest grade, the English quotations are 32*s.* per cwt. at Leeds; between 33*s.* and 33*s.* 8*d.* in Liverpool, Newcastle, and Shrewsbury; and 37*s.* 4*d.* in London. In Scotland the range is from 32*s.* 8*d.*, which is the average both of Perth and of Dundee, to 34*s.* 6*d.* in Aberdeen and 34*s.* 8*d.* in Glasgow. In all cases where the 1895 figures are available, the values of 1896 show a reduction.

The following table shows the number of fat cattle on which the average prices for each grade or quality were computed, and

exhibits the relative prices per live stone or live cwt. in the first three months of this year:—

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Leeds - -	37	s. d. 3 3	s. d. 26 0	110	s. d. 3 8	s. d. 29 4	235	s. d. 4 0	s. d. 32 0
Liverpool -	—	—	—	318	3 7	23 8	696	4 1½	33 0
London -	51	3 5½	27 8	569	4 2½	33 8	726	4 8	37 4
Newcastle -	44	3 3½	26 4	83	3 10½	31 0	495	4 2	33 4
Shrewsbury	22	3 2	25 4	92	3 8¾	29 10	1	4 2½	33 8
Aberdeen -	1,376	2 11½	23 6	3,135	3 11½	31 6	1,536	4 3¼	34 6
Dundee -	189	3 1½	24 10	1,615	3 10½	31 0	1,036	4 1	32 8
Edinburgh -	2	3 1	24 8	2,218	4 0¼	32 2	822	4 1¾	33 2
Glasgow -	—	—	—	210	4 0½	32 4	195	4 4	34 8
Perth - -	46	3 8½	29 6	366	3 10¾	31 2	337	4 1	32 8

Of the whole number of cattle returned to the Board as weighed, only a section have been actually sold at an agreed rate per stone or per cwt. of live weight, the great majority of transactions appearing still to take the form of a head-rate of price, even where the element of weight has helped in closing the bargain or has been resorted to afterwards for the purpose of ascertaining what the price in live weight represented. In the special cases shown below the prices are stated to have been fixed per live stone or live cwt.:—

Places.	Inferior. (3rd Quality.)			Good. (2nd Quality.)			Prime. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Liverpool -	—	s. d. —	s. d. —	50	s. d. 3 9½	s. d. 30 2	149	s. d. 4 1¾	s. d. 33 2
London -	14	3 7½	29 0	127	4 0¼	32 2	85	4 9½	33 4
Newcastle -	—	—	—	25	3 9	30 0	—	—	—
Aberdeen -	—	—	—	—	—	—	2	4 7½	37 0
Dundee -	4	3 3½	26 2	54	3 9½	30 2	83	4 2	33 4
Edinburgh -	—	—	—	—	—	—	36	4 4	34 8
Glasgow -	—	—	—	94	4 0¾	32 6	56	4 3½	34 2

The details of the cattle, sheep, and swine entering each of the scheduled places, of those weighed, and of those whereof the prices have been given, are shown for the quarter ended 31st March last in the following general table:—



**Cattle, Sheep, and Swine**, entering the **MARKETS** and **MARTS** of the under-mentioned Places with the Number **WEIGHED**, as received from the Market Authorities in the **First Quarter 1896**, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
<b>ENGLAND.</b>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Ashford - - -	2,310	10	10	10,774	—	—	6,674	—	—
Birmingham - -	6,785	2	2	11,643	—	—	1,217	—	—
Bristol - - -	10,795	—	—	18,649	—	—	25	—	—
Leicester - - -	12,410	278	180	10,963	108	—	2,913	—	—
Leeds - - -	8,692	432	432	27,100	247	247	3,411	432	—
Lincoln - - -	2,023	21	19	12,826	—	—	3,793	—	—
Liverpool - - -	16,182	1,014	1,014	50,425	228	228	—	—	—
London - - -	17,265	3,350	1,346	137,070	1,139	23	1170	—	—
Newcastle-upon-Tyne	25,422	622	622	68,204	—	—	11,083	139	139
Norwich - - -	18,346	64	64	42,040	40	40	8,547	—	—
Salford - - -	35,339	231	231	104,582	—	—	711	—	—
Shrewsbury - - -	9,502	896	761	5,773	—	—	4,500	—	—
Wakefield - - -	19,856	58	55	39,910	—	—	5,343	—	—
York - - -	16,476	14	11	18,396	—	—	1,859	—	—
<b>SCOTLAND.</b>									
Aberdeen - - -	15,204	6,047	6,047	11,802	4,247	4,247	4,147	—	—
Dundee - - -	4,403	2,896	2,880	5,067	1,757	1,757	585	—	—
Edinburgh - - -	14,382	6,459	*3,083	51,241	—	—	1,689	—	—
Glasgow - - -	15,960	605	405	76,867	183	172	2,214	—	—
Perth - - -	9,471	3,191	*749	35,170	2,167	2,167	1,864	169	169
<b>TOTAL for ENGLAND</b>	201,403	6,992	4,747	558,355	1,762	533	51,246	571	139
<b>TOTAL for SCOTLAND</b>	59,420	19,198	*13,169	180,147	8,354	8,343	10,499	169	169
<b>Total - - -</b>	260,823	26,190	*17,916	738,502	10,116	8,881	61,745	740	308

\* Prices for 3,351 cattle in addition to the above were quoted from Edinburgh, and for 2,442 cattle from Perth, but without distinguishing the quality.

## PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

## I.—PRICES OF MEAT.

AVERAGE PRICES OF DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Fourth Quarter of 1895, and the First Quarter of 1896.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	4TH QUARTER, 1895.	1ST QUARTER, 1896.
<b>BEEF:—</b>	<i>s. d. s. d.</i>	<i>s. d. s. d.</i>
Scotch, short sides - -	4 2 to 4 6	3 10 to 4 1
„ long sides - -	3 9 „ 4 0	3 6 „ 3 9
English, Prime - -	3 7 „ 3 10	3 6 „ 3 9
Cows and Bulls - -	2 0 „ 2 11	1 8 „ 2 8
American, Birkenhead killed -	2 11 „ 3 4	2 10 „ 3 1
„ Deptford killed -	2 11 „ 3 5	2 10 „ 3 2
„ Refrig. hind-qrs. -	3 4 „ 3 10	3 0 „ 3 4
„ „ fore-qrs. -	1 9 „ 2 3	1 11 „ 2 1
Argentine - -	—	2 2 „ 2 9
Australian, Refrig. hind-qrs. -	2 0 „ 2 2	1 7 „ 1 9
„ „ fore-qrs. -	1 7 „ 1 8	1 4 „ 1 5
<b>MUTTON:—</b>		
Scotch, Prime - -	4 6 „ 4 11	4 0 „ 4 5
English, Prime - -	4 1 „ 4 7	3 10 „ 4 4
Ewes - -	3 0 „ 3 5	2 9 „ 3 4
Dutch - -	3 4 „ 3 11	3 4 „ 3 9
German - -	—	3 5 „ 3 9
New Zealand - -	2 8 „ 2 11	2 1 „ 2 7
Australian - -	1 10 „ 2 1	1 6 „ 1 8
River Plate, Frozen - -	1 11 „ 2 1	1 5 „ 1 8
„ „ Town killed -	3 1 „ 3 5	2 11 „ 3 2
<b>LAMB:—</b>		
English - -	—	6 1 „ 7 4
New Zealand - -	3 0 „ 3 4	3 6 „ 4 1
<b>VEAL:—</b>		
English - -	4 1 „ 4 8	4 8 „ 5 4
Foreign - -	3 10 „ 4 5	3 8 „ 4 6
<b>PORK:—</b>		
English, small - -	3 2 „ 3 7	3 0 „ 3 4
„ medium and large - -	} 2 7 „ 3 1	2 4 „ 2 11
Foreign - -		

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE AND SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1st Quarter 1895	2 8	3 11	4 5	4 4	5 9	6 4
2nd Quarter „	2 9	4 2	4 6	4 1	5 2	5 9
3rd Quarter „	2 8	3 11	4 7	3 8	5 1	5 9
4th Quarter „	2 5	3 10	4 7	3 8	5 5	5 11
1st Quarter 1896	2 4	3 10	4 5	3 4	5 2	5 8

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1st Quarter 1895 -	2 10	to 3 8	3 4	to 5 0	2 8	to 4 2	4 0	to 5 4
2nd Quarter „	2 8 „	3 10	3 8 „	5 2	3 0 „	4 4	3 8 „	5 6
3rd Quarter „	3 2 „	3 10	3 6 „	5 2	2 8 „	4 0	3 4 „	4 8
4th Quarter „	2 8 „	3 6	3 4 „	4 10	2 8 „	3 8	3 0 „	4 6
1st Quarter 1896 -	2 0 „	3 2	3 0 „	4 10	2 8 „	3 8	3 0 „	4 6

\* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.



I.—PRICES OF MEAT—*continued.*

## BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the  
BERLIN CATTLE MARKET in the first four months of 1896.

MONTHS.	CATTLE.				SHEEP.			
	Per cwt.				Per cwt.			
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
January - - - -	58	0	to 61	1	45	10	to 48	10
February - - - -	56	5	„ 59	10	44	7	„ 46	7
March - - - -	55	0	„ 58	3	37	4	„ 45	6
April - - - -	57	4	„ 59	9	43	1	„ 45	6

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirthschaftliche Presse*.

## PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium  
Quality) in the PARIS CATTLE MARKET in the first four  
months of 1896.

MONTHS.	OXEN.		CALVES.		SHEEP.		PIGS.	
	Per cwt.		Per cwt.		Per cwt.		Per cwt.	
LIVE WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
January - -	36	6	47	1	42	3	33	8
February - -	34	4	46	3	41	4	33	5
March - -	32	3	42	8	40	7	32	2
April - -	32	2	42	5	41	0	29	10
DEAD WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
January - -	61	5	88	7	73	7	50	4
February - -	59	5	86	4	75	2	47	0
March - -	57	7	75	6	74	9	44	2
April - -	58	4	72	10	76	5	43	2

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.

I.—PRICES OF MEAT—*continued.*

## CHICAGO.

PRICES of CATTLE at CHICAGO per Cwt. (Live Weight) in the under-mentioned months of 1896.

Months.	Good Dressed Beef and Shipping Steers.				Export Cattle.				Extra Prime Cattle.			
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
January - -	16	4	to	22	17	9	to	23	21	0	to	24
February - -	16	4	„	20	16	4	„	21	20	4	„	22
March - -	17	3	„	20	16	10	„	21	19	7	„	22
April - -	17	6	„	19	16	7	„	20	19	2	„	22

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co., of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per *Cwt.*, of various Kinds of DEAD MEAT Imported into the United Kingdom from FOREIGN COUNTRIES and BRITISH POSSESSIONS in the under-mentioned Quarters of 1895 and 1896.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.	PORK.		BACON.	HAMS.
	Fresh.	Salted.		Fresh.	Salted.		
1st Quarter 1895 -	<i>s.</i> 40 <i>d.</i> 6	<i>s.</i> 26 <i>d.</i> 7	<i>s.</i> 35 <i>d.</i> 4	<i>s.</i> 43 <i>d.</i> 5	<i>s.</i> 29 <i>d.</i> 0	<i>s.</i> 37 <i>d.</i> 2	<i>s.</i> 43 <i>d.</i> 0
2nd Quarter „ -	38 11	25 9	35 9	48 2	25 3	38 2	44 5
3rd Quarter „ -	38 3	25 5	34 8	48 11	21 7	41 7	46 1
4th Quarter „ -	38 9	26 3	34 11	45 11	22 3	39 4	45 11
1st Quarter 1896 -	37 7	26 0	33 2	45 7	25 11	33 3	41 9

## II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,\* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1896, 1895, and 1894.

QUARTER ENDED.	PRICES.			QUANTITIES.		
	1896.	1895.	1894.	1896.	1895.	1894.
<b>Wheat.</b>						
Lady Day - -	s. d. 25 8	s. d. 20 1	s. d. 25 1	Quarters. 448,046	Quarters. 652,874	Quarters. 613,313
Midsummer - -	—	23 1	24 4	—	496,615	429,450
Michaelmas - -	—	23 11	22 11	—	361,223	313,288
Christmas - -	—	25 1	19 2	—	417,671	600,773
<b>Barley.</b>						
Lady Day - -	s. d. 22 5	s. d. 21 6	s. d. 28 1	Quarters. 955,902	Quarters. 1,035,588	Quarters. 671,620
Midsummer - -	—	20 3	25 2	—	79,936	40,863
Michaelmas - -	—	21 3	22 1	—	141,985	95,121
Christmas - -	—	24 10	22 7	—	2,169,067	1,921,744
<b>Oats.</b>						
Lady Day - -	s. d. 13 9	s. d. 13 9	s. d. 18 1	Quarters. 259,564	Quarters. 250,838	Quarters. 198,922
Midsummer - -	—	15 2	18 7	—	111,424	61,862
Michaelmas - -	—	15 1	17 11	—	88,312	70,824
Christmas - -	—	13 10	13 10	—	215,365	239,139

\* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.



## II.—CORN PRICES :—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1896, and in the Corresponding Weeks in 1895 and 1894.

Weeks ended (in 1896)	Wheat.			Barley.			Oats.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
Jan. 4 -	s. d. 25 2	s. d. 20 4	s. d. 26 4	s. d. 24 7	s. d. 21 5	s. d. 28 10	s. d. 13 10	s. d. 14 2	s. d. 17 8
„ 11 -	25 4	20 8	26 4	23 11	21 3	23 10	13 9	13 9	18 0
„ 18 -	25 10	20 8	26 3	23 6	21 8	29 2	13 11	14 0	18 0
„ 25 -	26 1	20 9	26 1	23 7	21 11	29 1	13 10	13 10	18 0
Feb. 1 -	26 3	20 6	25 7	23 1	21 5	28 11	14 1	13 10	18 1
„ 8 -	26 4	19 11	25 3	22 5	21 8	28 8	14 0	13 6	17 10
„ 15 -	26 7	19 10	24 10	21 11	21 10	28 3	14 0	13 8	18 0
„ 22 -	26 3	19 10	24 5	21 10	22 2	28 0	13 9	13 9	18 4
„ 29 -	25 6	19 10	24 3	21 10	21 9	27 5	13 10	14 0	18 5
Mar. 7 -	25 4	19 9	24 3	21 5	21 6	27 0	13 8	13 9	18 4
„ 14 -	25 5	19 9	24 3	21 3	21 7	27 5	13 10	13 8	18 4
„ 21 -	25 1	20 0	24 4	21 1	20 10	26 11	13 9	13 10	18 1
„ 28 -	24 10	20 3	24 6	21 4	20 10	27 1	13 4	14 0	18 0
Apr. 4 -	24 7	20 4	24 6	21 10	20 11	26 7	13 3	14 5	18 3
„ 11 -	24 6	20 4	24 7	21 0	21 3	27 10	13 1	13 11	18 2
„ 18 -	24 11	20 6	24 8	23 6	21 2	28 6	14 0	14 5	18 4
„ 25 -	25 6	20 9	24 10	21 0	20 8	26 3	13 11	14 2	18 3
May 2 -	25 8	21 4	24 10	22 6	20 5	26 1	14 3	14 3	18 7
„ 9 -	25 7	22 4	24 9	21 0	20 8	24 11	14 4	15 3	18 9
„ 16 -	25 7	22 10	24 5	21 0	20 6	25 0	14 5	15 3	18 9
„ 23 -	25 6	23 5	24 4	21 8	20 1	24 0	14 6	15 9	18 10
„ 30 -	—	24 5	23 11	—	19 4	23 11	—	15 10	18 9

## II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the Fourth Quarter of 1895, and in the First Quarter of 1896.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	Fourth Quarter, 1895.	First Quarter, 1896.
	<i>s. d.</i>	<i>s. d.</i>
ARGENTINE REPUBLIC - - -	21 11	26 1
CHILE - - - - -	26 3	25 11
ROUMANIA - - - - -	23 0	23 10
RUSSIA - - - - -	22 9	24 5
TURKEY - - - - -	21 6	23 7
UNITED STATES OF AMERICA { Atlantic -	24 7	25 6
{ Pacific -	25 3	26 9
AUSTRALASIA - - - - -	24 11	27 5
INDIA, BRITISH - - - - -	23 2	24 5
NORTH AMERICA, BRITISH - - -	25 6	25 5

## II.—CORN PRICES:—BELGIUM, FRANCE, AND ENGLAND.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND in the first four months of 1896.

Month.	Belgium.	France.	England.
WHEAT.			
1895.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
January - - - - -	25 6	30 4	25 7
February - - - - -	—	30 6	26 2
March - - - - -	—	30 6	25 2
April - - - - -	—	30 6	24 10
BARLEY.			
1896.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
January - - - - -	20 6	19 9	23 10
February - - - - -	—	19 10	22 2
March - - - - -	—	19 9	21 3
April - - - - -	—	19 10	21 10
OATS.			
1896.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
January - - - - -	16 1	17 3	13 10
February - - - - -	—	17 4	13 11
March - - - - -	—	17 3	13 7
April - - - - -	—	17 7	13 6

*Note.*—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

## II.—CORN PRICES :—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER  
at the under-mentioned Markets in the first four months  
of 1896.

Month.	London.	Paris.	Berlin.
WHEAT.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - -	27 1	30 9	32 0
February - - -	26 10	30 6	34 1
March - - -	25 5	30 6	34 1
April - - -	25 3	30 6	34 4
BARLEY.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d. s. d.
January - - -	25 9	19 6	20 6 to 22 7
February - - -	25 11	19 1	20 6 „ 22 9
March - - -	26 8	19 1	20 6 „ 22 9
April - - -	25 3	19 8	20 4 „ 22 9
OATS.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
January - - -	15 3	17 9	17 0
February - - -	15 6	17 1	16 10
March - - -	15 3	17 0	16 10
April - - -	14 7	17 7	16 9

*Note.*—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.



## III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE, in the months of March and April 1896, and in the First Quarter of 1896.

(Compiled from the *Grocer*.)

DESCRIPTION.	1st Quarter of 1896.				Month of March 1896.				Month of April 1896.			
	Per Cwt.				Per Cwt.				Per Cwt.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
BUTTER :												
Cork, 1sts -	117	3	to	—	110	0	to	—	92	3	to	—
„ 2nds	106	1	„	—	97	0	„	—	80	0	„	—
„ 3rds	95	8	„	—	86	9	„	—	73	0	„	—
„ 4ths	78	5	„	—	71	0	„	—	67	0	„	—
Friesland	96	8	„	100 4	88	0	„	92 0	78	6	„	82 6
Dutch Factories	100	10	„	105 4	92	6	„	97 6	83	6	„	88
French Baskets	108	3	„	117 2	103	6	„	113 0	98	0	„	107 0
„ Crocks and Firkins.	96	7	„	103 10	92	6	„	98 0	88	6	„	94 0
„ 2nds and 3rds	87	0	„	93 2	85	0	„	89 6	79	0	„	85 6
Danish and Swedish	110	1	„	114 9	107	0	„	113 0	93	6	„	98 0
Finnish	93	10	„	107 6	94	0	„	103 6	83	6	„	90 6
Italian	—	—	—	—	86	0	„	95 0	78	6	„	88 6
Australian	89	2	„	105 8	80	6	„	101 6	75	6	„	94 6
New Zealand	84	8	„	105 6	70	6	„	101 0	64	0	„	94 6
Argentine	92	0	„	104 10	90	0	„	103 0	82	6	„	92 6
American	59	0	„	95 11	58	0	„	104 6	54	6	„	81 0
Fresh Rolls (Foreign) per doz.	10	3	„	15 0	9	9	„	14 6	9	7 $\frac{1}{2}$	„	13 $\frac{1}{2}$
MARGARINE :												
Margarine	33	5	„	55 6	28	3	„	52 0	20	6	„	49 0
Mixtures	60	0	„	82 4	56	0	„	78 6	52	6	„	75 6
CHEESE :												
Cheddar	41	0	„	68 10	41	6	„	69 0	39	0	„	70 0
Somerset	40	0	„	60 0	40	0	„	60 0	40	0	„	60 0
Cheshire	30	0	„	79 8	30	0	„	76 0	30	0	„	76 0
Double Gloucester	39	8	„	57 1	40	0	„	58 0	40	0	„	58 0
Derby	30	4	„	55 10	28	0	„	56 0	28	0	„	56 0

## PRICES OF VEGETABLES AND FRUIT.

## I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	MARCH.				APRIL.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beans, Channel Islands, per lb. -	1 1	to 1 3	—	—	0 10	to 1 0	—	—
„ Madeira, per basket 8-10 lbs.	3 9	„ 4 3	—	—	3 0	„ 3 6	—	—
Broccoli, per bushel -	—	—	1 0	to —	—	—	0 8	to —
Carrots, per dozen bunches -	—	—	2 4	„ —	—	—	2 6	„ —
Greens, per bushel -	—	—	1 3	„ 2 0	—	—	0 10	„ —
Horseradish, per bundle -	—	—	1 0	„ —	—	—	1 1	„ —
Leeks, per dozen -	—	—	1 2	„ —	—	—	1 5	„ —
Mint, per bunch -	0 5	„ 0 7	—	—	0 2½	„ 0 4½	—	—
Mushrooms, per lb. -	0 6½	„ 0 8	—	—	0 6	„ 0 8	0 7½	„ —
Onions, per bag -	—	—	2 0	„ —	—	—	3 0	„ —
„ English, per cwt. -	4 0	„ 5 0	—	—	3 0	„ 4 0	—	—
„ spring, per dozen bunches -	—	—	2 3	„ —	—	—	2 0	„ —
Parsley, per dozen bunches -	—	—	2 0	„ —	—	—	1 9	„ —
Peas, Channel Islands, per lb. -	2 0	„ 2 6	—	—	0 10	„ 1 3	—	—
Potatoes:								
Bruces, per ton -	—	—	60 0	„ 75 0	—	—	38 4	„ 46 8
Dunbar main crop, per ton -	—	—	61 8	„ 81 8	—	—	—	—
Hebrons, per ton -	—	—	73 4	„ 83 4	—	—	75 0	„ 85 0
Imperators, „ -	—	—	33 4	„ 40 0	—	—	20 0	„ 30 0
Magnums, „ -	—	—	30 0	„ 40 0	—	—	30 0	„ 40 0
Main Crop, „ -	—	—	42 6	„ 52 6	—	—	—	—
Saxons, per ton -	—	—	70 0	„ 83 4	—	—	—	—
Sutton's Abundance, per ton -	—	—	43 4	„ 56 8	—	—	—	—
Canary, per cwt. -	10 0	„ 18 0	—	—	6 6	„ 13 0	11 0	„ 12 6
Channel Islands, per lb. -	0 4	„ 0 5	—	—	0 3	„ 0 5	—	—
Malta, per cwt. -	10 0	„ 12 0	—	—	8 6	„ 14 0	—	—
Radishes, per dozen bunches -	0 10	„ 1 0	1 0	„ —	0 8½	„ 0 10	1 0	„ —
Rhubarb, per dozen bundles -	—	—	2 0	„ —	—	—	1 9	„ 2 2
„ forced, per dozen -	—	—	1 0	„ —	—	—	1 0	„ 1 3
Savoy, per tally -	—	—	6 0	„ —	—	—	—	—
Seakale, per punnet -	0 9	„ 1 3	1 2	„ —	0 9	„ 1 2½	1 3	„ —
Sprouts, per half bushel -	—	—	1 7½	„ 5 0	—	—	—	—
Turnips, per dozen bunches -	—	—	1 10	„ —	—	—	2 0	„ —
Turnip-tops, per bushel -	—	—	1 1½	„ —	—	—	—	—

PRICES OF VEGETABLES AND FRUIT—*continued.*I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—*continued.*(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	MARCH.				APRIL.			
	BOROUGH AND SPITAL-FIELDS.		STRATFORD.		BOROUGH AND SPITAL-FIELDS.		STRATFORD.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beetroot, per dozen	—	—	0 4	to 0 6	—	—	0 4	to 0 7
Broccoli, per bag	0 7½	to 1 0	—	—	—	—	0 9	„ 1 0
„ per bushel	0 8	„ 1 0	—	—	0 9	to 1 0	—	—
Cabbages, per bag	—	—	1 0	„ 1 6	—	—	—	—
„ per tally	2 6	„ 3 0	—	—	2 1½	„ 2 5½	2 8	„ 4 6
Carrots, per dozen bunches	2 0	„ 2 6	—	—	1 11	„ 3 2	—	—
„ cattle feeding, per ton	18 9	„ 22 0	20 0	„ 23 6	—	—	16 8	„ 21 4
„ household, per ton	24 6	„ 28 8	21 9	„ 27 0	24 0	„ 40 0	22 8	„ 29 4
Celery, per dozen	1 3	„ 1 6	—	—	—	—	—	—
Greens, per bag	—	—	1 0	„ 1 6	1 6	„ 2 3	1 0	„ 1 9
„ per dozen bunches	—	—	1 1	„ 1 6	—	—	1 7	„ 2 2
Horseradish, per bundle	0 11	„ 1 2	1 0	„ 1 2	1 0	„ 1 2	1 0	„ 1 3
„ per dozen rolls	8 0	„ 11 0	—	—	8 4	„ 11 4	—	—
Mangolds, per ton	—	—	12 0	„ 16 0	—	—	12 10	„ 18 0
Mint, per dozen bunches	—	—	—	—	1 8	„ 2 4	—	—
Onions, per bag	3 8	„ 4 8	—	—	3 8	„ 4 10	5 0	„ 6 0
„ Bordeaux, per case	—	—	4 6	„ 5 7½	—	—	—	—
„ Dutch, per bag	—	—	2 6	„ 2 11	—	—	3 0	„ 3 6
„ English, per ton	—	—	60 0	„ 75 0	—	—	80 0	„ 100 0
„ spring, per dozen bunches	1 6	„ 2 0	1 6	„ 2 0	1 1½	„ 1 8	1 0	„ 1 6
Parsley, per dozen bunches	1 1½	„ 1 7½	1 0	„ 1 6	1 0	„ 1 5	0 9	„ 1 1
Parsnips, per score	0 6	„ 0 7	0 4	„ 0 6	0 6	„ 0 8	0 3½	„ 0 7½
Potatoes:								
„ Bruces, dark soil, per ton	—	—	26 8	„ 31 8	—	—	20 0	„ 25 0
„ light „ „	—	—	33 4	„ 48 4	—	—	26 0	„ 55 0
Hebrons, per ton	50 0	„ 70 0	—	—	—	—	—	—
Reading Giants, per ton	32 6	„ 40 0	35 0	„ 53 4	30 0	„ 42 6	28 4	„ 46 8
Scotch Main Crop „	48 4	„ 61 8	56 8	„ 70 0	43 4	„ 56 8	50 0	„ 61 8
Sutton's Abundance, per ton	40 0	„ 50 0	38 4	„ 56 8	47 6	„ 62 6	36 8	„ 51 8
Rhubarb, per dozen bundles	1 9	„ 2 2	2 0	„ 2 6	1 8	„ 2 4	1 6	„ 2 0
„ forced, per doz. bundles	—	—	1 0	„ 1 3	0 9½	„ 1 3	0 11	„ 1 2
Salad, per dozen	—	—	1 6	„ 2 0	—	—	1 6	„ 2 0
Savoy, per bag	—	—	2 6	„ 4 6	—	—	—	—
„ per tally	3 10½	„ 4 7½	2 6	„ 3 6	—	—	—	—
Seakale, per bundle	0 8	„ 0 9	—	—	0 8½	„ 0 10	—	—
Sprouts, per half sieve	1 0	„ 1 3	1 0	„ 1 3	—	—	—	—
Swedes, per ton	—	—	12 1½	„ 17 3	—	—	12 0	„ 16 0
Turnips, per dozen bunches	2 0	„ 2 7½	—	—	2 4½	„ 3 2	—	—
„ per ton	25 0	„ 31 0	—	—	25 0	„ 40 0	—	—
„ White, per bag	—	—	1 6	„ 1 10	—	—	1 6	„ 2 0
Turnip-tops, per bag	1 3	„ 1 9	0 10½	„ 1 3	—	—	—	—



### PRICES OF VEGETABLES AND FRUIT—continued.

II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the  
under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	MARCH.	APRIL.
COVENT GARDEN :	s. d. s. d.	s. d. s. d.
Apples, Nova Scotian, per barrel -	14 0 to 22 0	14 0 to 22 0
Cobs, per 100 lbs. -	25 0 „ 30 0	25 0 „ 30 0
Figs, per dozen -	— —	6 5 „ 8 5
Grapes, Cape, black, 20 lb. boxes	12 0 —	— —
„ „ 14 lb. „ -	7 6 „ 8 6	— —
„ „ white, 9 lb. „ -	9 0 —	— —
„ Gros Colmar, 1st quality, per lb.	2 10 „ 3 4	4 3 „ 4 9
„ „ 2nd „ per lb.	2 7 „ 2 10	2 9 „ 3 0
„ Alicante, 1st quality, per lb. -	3 6 „ 4 0	— —
„ „ 2nd „ per lb. -	2 0 „ 2 3	— —
Nectarines, Cape, per box -	6 3 „ 7 3	— —
Peaches, per dozen -	— —	15 0 „ 18 0
Pears, Cape (Williams), per box of 20	— —	— —
-24 - - -	7 0 „ 9 0	— —
Pine-apples, St. Michael, each -	2 6 „ 4 6	2 2 „ 4 9
Strawberries, morning gathered, per lb.	— —	5 0 „ 6 0
„ 2nd quality, per lb.	— —	2 0 „ 2 7
Tomatoes, Canary Islands, per case,	— —	— —
12-14 lbs.	5 0 „ 5 6	5 5 „ 6 2½
„ „ „ per box,	— —	— —
4-4½ lbs.	1 3 „ 1 9	1 7 „ 2 1
„ English, per lb. -	1 6 —	1 2½ „ 1 5½
FARRINGTON :		
Apples, Baldwins, per barrel -	10 0 „ 14 6	— —
„ Greenings, per barrel -	15 0 —	— —
„ Russets (No. 1), per barrel -	20 0 —	— —
„ Tasmanian, per box -	— —	11 0 „ 14 6
Grapes, good black, per lb. -	2 6 —	— —
Pineapples, each -	— —	2 1½ „ 2 9
Tomatoes, Canary, per box -	— —	1 4½ „ 2 0
BOROUGH AND SPITALFIELDS :		
Apples, per bushel -	4 0 „ 6 0	4 0 „ 6 0
„ dessert, per bushel -	6 0 „ 7 3	7 0 „ 8 4
„ cooking, per bushel -	5 3 „ 6 3	6 4 „ 7 4
STRATFORD :		
Apples, English, cooking, per bushel -	3 4½ „ 4 10½	5 6 „ 7 0
„ „ dessert, per bushel -	3 4 „ 4 6	— —
„ Nova Scotian, per barrel -	13 9 „ 16 0	17 4 „ 22 0

## PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per Pack of 240 lbs., in the months of March and April 1896.

(Compiled from the *Economist*.)

DESCRIPTION.	MARCH 1896.				APRIL 1896.			
	£	s.	£	s.	£	s.	£	s.
South Downs - - -	9	10	11	10	9	5	11	5
Half-breds - - -	9	10	11	10	9	5	11	0
Leicester - - -	10	0	11	10	10	0	11	5
Kent fleeces - - -	9	10	11	0	9	10	10	15

## DISEASES OF ANIMALS.

## I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia** and of **Swine-Fever**, with the Number of CATTLE and SWINE Slaughtered by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	Outbreaks Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	Outbreaks Confirmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
	No.	No.	No.	No.	No.
September 1894 -	1	7	88	1,889	12,311
December 1894 -	—	—	—	985	7,622
March 1895 -	1	—	43	1,306	9,584
June 1895 -	—	—	—	1,634	15,096
September 1895 -	—	—	—	1,578	18,293
December 1895 -	—	—	—	1,787	26,958
March 1896 -	1	8	78	1,524	19,596

NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
September 1894	91	220	230	372	49	—
December 1894	106	162	212	332	107	4
March 1895 -	128	284	238	427	201	11
June 1895 -	110	266	251	360	212	16
September 1895	86	178	284	449	125	19
December 1895	115	201	197	359	134	9
March 1896 -	156	257	194	320	194	10

## II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia** and of **Swine-Fever**, with the Number of CATTLE and SWINE slaughtered by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUT- BREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	OUT- BREAKS Con- firmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
	No.	No.	No.	No.	No.
September 1894 -	—	—	—	2,441	9,446
December 1894 -	—	—	—	1,984	6,146
March 1895 -	—	—	—	1,276	3,402
June 1895 -	—	—	—	856	1,491
September 1895 -	—	—	—	788	1,240
December 1895 -	—	—	—	165	625
March 1896 -	—	—	—	267	1,508



NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Ireland in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
September 1894	1	1	6	19	180	62
December 1894	1	2	2	3	148	88
March 1895 -	1	1	5	5	115	56
June 1895 -	2	2	—	—	184	51
September 1895	1	1	—	—	162	58
December 1895	—	—	—	—	101	37
March 1896 -	—	—	4	6	156	33

## POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

### ADVANTAGES OFFERED FOR LIFE INSURANCE.

#### REDUCED ANNUAL PREMIUMS.

#### EXTENSION OF OLD AGE INSURANCES.

NEW LIFE INSURANCE TABLES came into force on the 1st February 1896.

Under these Tables, which are given at pages 112 and 113 :—

First—THE ANNUAL PREMIUMS are REDUCED.

Second—OLD AGE INSURANCES can now be secured for any sum of money from 5*l.* to 100*l.* on attaining the age of 55, 60, or 65 years. In case of death, the insurance money will be paid to the representatives.

LIFE INSURANCES from 5*l.* to 100*l.* can be granted to persons between 14 and 65 years of age. Children between 8 and 14 years of age can be insured for 5*l.*

GOVERNMENT SECURITY. Persons insured have direct Government security.

PROPOSAL FORMS can be obtained at any Post Office Savings Bank, where the charges can also be ascertained.

**EVIDENCE OF AGE.** A Statement of Age is sufficient if the Controller of the Savings Bank Department can verify it from the records of the Registrar-General, London, and thus the cost of a Certificate of Birth is saved. A simple form for the purpose can be obtained at any Post Office Savings Bank.

**MEDICAL CERTIFICATES** can be dispensed with for Insurances up to 25*l.* inclusive.

**PREMIUMS** are payable by transfers from Savings Bank deposit accounts, and deposits can be made for the purpose at any Post Office Savings Bank. When the balance in the account is insufficient, the depositor will be informed accordingly in time to make a deposit. By means of the Penny Stamp Slips the provision can be made in sums of one penny at a time.

**FRIENDLY SOCIETIES.** Members can pay their premiums through their Society if the Society is willing to undertake the collection.

**RESIDENCE ABROAD.** Permission is granted to persons over 30 years of age who have been insured 5 years, to reside in any part of the World without the payment of any extra premium.

**LAPSED INSURANCES—MONEY NOT LOST.** If after paying two annual premiums the Insurance is discontinued, a Surrender Value is payable, or a "paid up" Policy is issued for such an amount of Insurance as the premiums already paid may justify.

**NOMINATIONS.** Any insured person over 16 years of age can, without any expense, nominate a person to receive the amount of the Insurance money at death.

**PAYMENT AT DEATH.** The amount insured is paid immediately evidence of death is furnished. A form for obtaining a cheap certificate of death, at the reduced charge of one shilling, can be obtained from the Controller of the Savings Bank Department.

---

## NEW LIFE INSURANCE TABLES—REDUCED PREMIUMS.

*Extension of Old Age Insurances.*

AGE next Birthday.	Premiums to assure £5, payable:—				
	At Death.		At Age of 55 or Death.	At Age of 60 or Death.	At Age of 65 or Death.
	Annual Premium for Life.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 55 Years.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 65 Years.
	Table 1.	Table 2.	Table 3.	Table 4.	Table 5.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
9 -	1 6	1 7	1 11	1 9	1 8
10 -	1 7	1 8	2 0	1 10	1 9
11 -	1 7	1 8	2 0	1 10	1 9
12 -	1 7	1 8	2 1	1 11	1 9
13 -	1 8	1 9	2 2	1 11	1 10
14 -	1 8	1 10	2 2	2 0	1 11
15 -	1 9	1 10	2 3	2 1	1 11
16 -	1 9	1 11	2 4	2 2	2 0
17 -	1 10	1 11	2 5	2 2	2 0
18 -	1 10	2 0	2 6	2 3	2 1
19 -	1 11	2 1	2 7	2 4	2 2
20 -	1 11	2 1	2 8	2 5	2 2
21 -	2 0	2 2	2 9	2 5	2 3
22 -	2 0	2 2	2 10	2 6	2 4
23 -	2 1	2 3	2 11	2 7	2 4
24 -	2 1	2 4	3 0	2 8	2 5
25 -	2 2	2 5	3 1	2 9	2 6
26 -	2 2	2 5	3 2	2 10	2 7
27 -	2 3	2 6	3 4	2 11	2 7
28 -	2 3	2 7	3 5	3 0	2 8
29 -	2 4	2 8	3 7	3 1	2 9
30 -	2 5	2 9	3 9	3 2	2 10
31 -	2 6	2 10	3 11	3 4	2 11
32 -	2 6	2 11	4 1	3 5	3 0
33 -	2 7	3 0	4 3	3 7	3 2
34 -	2 8	3 2	4 5	3 8	3 3
35 -	2 9	3 3	4 8	3 10	3 4
36 -	2 10	3 5	4 11	4 0	3 6
37 -	2 11	3 6	5 2	4 2	3 7
38 -	3 0	3 8	5 6	4 5	3 9
39 -	3 1	3 10	5 10	4 7	3 11
40 -	3 2	4 0	6 2	4 10	4 1
41 -	3 3	4 2	6 7	5 1	4 3
42 -	3 4	4 5	7 1	5 4	4 5
43 -	3 5	4 8	7 8	5 8	4 7
44 -	3 7	4 11	8 4	6 0	4 10
45 -	3 8	5 2	9 1	6 5	5 1
46 -	3 10	5 6	—	6 10	5 4
47 -	3 11	5 11	—	7 4	5 7
48 -	4 1	6 4	—	7 11	5 11
49 -	4 3	6 10	—	8 7	6 4
50 -	4 4	7 5	—	9 4	6 8

These Tables are applicable to Assurances for amounts of not less than £5 and under £25. Premiums for Assurances over £5 are proportionally higher. For instance, the Premium for an Assurance of £10 would be twice the amount given above.

FOR £100 TABLES SEE NEXT PAGE.



## NEW LIFE INSURANCE TABLES---continued.

AGE next Birthday.	Premiums to assure £100, payable:—				
	At Death.		At Age of 55 or Death.	At Age of 60 or Death.	At Age of 65 or Death.
	Annual Premium for Life.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 55 Years.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 65 Years.
	Table 11.	Table 12.	Table 13.	Table 14.	Table 15.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
15 -	1 8 6	1 11 0	2 0 0	1 15 6	1 13 0
16 -	1 9 6	1 12 0	2 1 6	1 17 0	1 14 0
17 -	1 10 6	1 13 0	2 3 0	1 18 6	1 15 0
18 -	1 11 6	1 14 6	2 4 6	1 19 6	1 16 0
19 -	1 12 0	1 15 6	2 6 0	2 1 0	1 17 6
20 -	1 13 0	1 16 6	2 8 0	2 2 6	1 18 6
21 -	1 14 0	1 17 6	2 9 6	2 3 6	1 19 6
22 -	1 14 6	1 18 6	2 11 6	2 5 0	2 0 6
23 -	1 15 6	1 19 6	2 13 0	2 6 6	2 2 0
24 -	1 16 6	2 1 0	2 15 0	2 8 0	2 3 0
25 -	1 17 6	2 2 6	2 17 6	2 9 6	2 4 6
26 -	1 18 6	2 3 6	2 19 6	2 11 6	2 6 0
27 -	1 19 6	2 5 0	3 2 0	2 13 6	2 7 6
28 -	2 0 6	2 7 0	3 5 0	2 15 6	2 9 0
29 -	2 1 6	2 8 6	3 7 6	2 17 6	2 10 6
30 -	2 3 0	2 10 0	3 11 0	2 19 6	2 12 6
31 -	2 4 0	2 12 0	3 14 0	3 2 0	2 14 0
32 -	2 5 6	2 14 0	3 17 6	3 4 6	2 16 0
33 -	2 6 6	2 16 0	4 1 6	3 7 6	2 18 6
34 -	2 8 0	2 18 6	4 6 0	3 10 0	3 0 6
35 -	2 9 6	3 1 0	4 10 6	3 13 6	3 3 0
36 -	2 11 0	3 3 6	4 15 6	3 17 0	3 5 6
37 -	2 13 0	3 6 6	5 1 6	4 0 6	3 8 0
38 -	2 14 6	3 9 6	5 7 6	4 4 6	3 11 0
39 -	2 16 6	3 13 0	5 14 6	4 9 0	3 14 0
40 -	2 18 0	3 16 6	6 2 6	4 13 6	3 17 6
41 -	3 0 0	4 0 6	6 11 6	4 19 0	4 1 0
42 -	3 2 6	4 5 0	7 1 6	5 4 6	4 5 0
43 -	3 4 6	4 10 0	7 13 6	5 11 0	4 9 0
44 -	3 7 0	4 15 6	8 7 6	5 18 6	4 13 6
45 -	3 9 6	5 1 6	9 3 6	6 6 6	4 19 0
46 -	3 12 0	5 8 6	—	6 16 0	5 4 6
47 -	3 15 0	5 16 0	—	7 6 0	5 10 6
48 -	3 17 6	6 5 0	—	7 18 0	5 17 0
49 -	4 1 0	6 15 6	—	8 12 0	6 4 6
50 -	4 4 0	7 7 6	—	9 8 6	6 13 0

These Tables are applicable to Assurances of £25 to £100, the Premiums for Assurances of less than £100 being proportionately lower. For instance, the Premium for an Assurance of £50 would be half the amount given above.

FOR £5 TABLES SEE PRECEDING PAGE.

## ADDITIONAL INFORMATION.

Further information can be obtained of the local Postmaster or on application to the Controller, Savings Bank Department, General Post Office, London, free of Postage.

# **LIST OF LEAFLETS ISSUED BY THE BOARD OF AGRICULTURE.**

Number.	Title.
Leaflet No. 1	Mites on Currant and Nut Trees.
„ „ 2	Vine and Raspberry Weevils.
„ „ 3	The Turnip Fly or Flea.
„ „ 4	Caterpillars on Fruit Trees.
„ „ 5	The Mangel Wurzel Fly.
„ „ 6	The Field Vole.
„ „ 7	Autumn Catch Crops and Fodder Supply.
„ „ 8	Farmers and Assessments to Local Rates.
„ „ 9	Ensilage.
„ „ 10	Wireworms.
„ „ 11	The Daddy Longlegs.
„ „ 12	The Gooseberry Saw-Fly.
„ „ 13	Acorn Poisoning.
„ „ 14	The Raspberry Moth.
„ „ 15	The Apple Blossom Weevil.
„ „ 16	The Apple Sucker.
„ „ 17	Preservation of Commons.
„ „ 18	Fertilisers and Feeding Stuffs Act, 1893.
„ „ 19	Pea and Bean Weevil.
„ „ 20	The Magpie Moth.
„ „ 21	The Warble Fly.
„ „ 22	The Diamond Back Moth.
„ „ 23	Potato Disease.
„ „ 24	The Ribbon Footed Corn-Fly.
„ „ 25	The Cockchafer.
„ „ 26	Farmers and the Income Tax.
„ „ 27	Remission of Tithe Rentcharge.
„ „ 28	Anthrax.
„ „ 29	Swine Fever.
„ „ 30	The Codlin Moth.

*Presd*  
11 JUN. 95



*Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.*

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# The Journal

OF THE

## Board of Agriculture.

September 1896.

	Page
BARLEY SUPPLY OF THE UNITED KINGDOM - - -	115
ROTTENNESS OF TURNIPS AND SWEDES - - -	120
FOUL BROOD OR BEE PEST - - -	132
AGRICULTURAL RETURNS OF GREAT BRITAIN, 1896 -	135
CULTIVATION OF CEREALS IN ARGENTINA - - -	142
REPORTS ON FOREIGN CROPS - - -	145
INJURIOUS INSECTS AND FUNGI - - -	153
GENERAL AGRICULTURAL NOTES - - -	167
HOP ACREAGE, 1896 - - -	187
FOREIGN OFFICE REPORTS - - -	188
PARLIAMENTARY PUBLICATIONS - - -	195
IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE -	209
PRICES OF LIVE STOCK - - -	222
STATISTICAL TABLES - - -	227

(For detailed Table of Contents see page v of Advertisements.)



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# The Journal

OF THE



## Board of Agriculture.

Vol. III.]

September 1896.

[No. 2.

### THE BARLEY SUPPLY OF THE UNITED KINGDOM.

One of the main features of the import trade of the United Kingdom in grain during the past three years has been the large augmentation in the supplies of foreign barley. Prior to 1893 the imports of this grain had certainly exhibited a tendency, with some fluctuations, to increase, but the expansion was not, on the whole, remarkable. In 1893, however, the returns showed an importation of nearly 23 million cwts. of barley, as compared with an annual average of 16 million cwts. in the previous three years; in the following year the foreign supply rose to 31 million cwts.; and last year it amounted to  $23\frac{1}{2}$  million cwts. There is only one other year in which the imports of this cereal have exceeded 20 million cwts., viz., 1888, when 21 million cwts. were received.

The average annual quantities of barley imported into the United Kingdom in triennial periods since 1875 have been as follows :—

Period.			Quantities.	Values.
			Cwts.	£
1875-77	-	-	11,261,000	4,593,000
1878-80	-	-	12,470,000	5,119,000
1881-83	-	-	13,936,000	5,113,000
1884-86	-	-	14,011,000	4,238,000
1887-89	-	-	17,649,000	4,932,000
1890-92	-	-	16,140,000	5,080,000
1893-95	-	-	25,902,000	6,135,000

A closer investigation of the circumstances connected with the imports of foreign barley in 1893 and 1894 would appear to show that the large foreign supplies of those years were influenced

to a considerable extent by the scarcity of feeding stuffs in this country owing to the effects of the drought of 1893. The imports of the first six months of the year last mentioned were not very much in excess of those of the corresponding periods of the two previous years, the actual receipts having been 6,434,000 cwts., as compared with 5,097,000 cwts. and 5,908,000 cwts. in 1892 and 1891 respectively. But in the last six months of 1893 the imports amounted to 16,400,000 cwts.; in the following half year 14,261,000 cwts. were imported, and in the last six months of 1894 the receipts were 16,980,000 cwts. making a total importation for that year of 31,241,000 cwts. The bulk of the large supply of 1894 consisted of Russian barley of an average value of 13s. 1d. per quarter. In this connection it is, however, worthy of notice that, apart from any influence that may have been exercised on the foreign supply by the climatic conditions of Great Britain, there has been a remarkable augmentation in the imports of Russian barley in recent years, and this would seem to point to an increasing demand for this cheap grain for stock-feeding and other purposes.

Taking the average annual imports of barley in successive three-year periods since 1875, the proportion per cent. of the total supply contributed by Russia and other countries has been as under :—

Source.	1875-77.	1878-80.	1881-83.	1884-86.	1887-89.	1890-92.	1893-95.
Russia	16·6	25·5	25·7	40·5	50·7	41·0	59·6
Turkey, Roumania, and Bulgaria.	33·1	16·6	34·3	25·5	21·9	30·8	22·5
Other European countries.	41·8	51·1	35·7	25·2	21·7	11·8	7·3
Extra European countries.	8·5	8·8	4·3	8·8	5·7	16·4	10·6
	100·0	100·0	100·0	100·0	100·0	100·0	100·0

From the foregoing statement it will be seen that nearly the whole of the barley imported into the United Kingdom is shipped from the Continent, and that in the last 10 years Russia has been credited with upwards of 50 per cent. of the total foreign supply. This increase in the receipts of Russian barley has been practically a progressive one during the past 25 years, and it has been accompanied by an almost corresponding decline in the aggregate imports from Germany, France, and Scandinavia, which are included with Austria (whence the supplies were insignificant until after 1882) under the heading of "Other European countries" in the above statement.

In the nine years 1875 to 1883 the annual exports of barley from Germany to the United Kingdom were, with one exception, never below a million cwts., and in five of those years they fluctuated between 2 million and 3½ million cwts., or from 15 to 30 per cent. of our total importation from all sources; but since 1883 our annual receipts of barley from German ports have ex-

ceeded a million cwts. on only three occasions. In the four years 1890-93 they ranged from less than a quarter to one half of that quantity; in the two succeeding years, however, there was an increase.

The imports of barley from France have been characterised by greater fluctuations than has been the case with those from Germany, but there has been a marked falling-off in the shipments of French barley to this country since 1886. In nine of the twelve years prior to 1887 the imports were over a million cwts., but since 1886 they have only twice just exceeded that quantity, while, with these exceptions, the maximum consignment in any year has been 625,000 cwts. in 1887, and the minimum, 178,000 cwts. in 1894.

Scandinavian barley has been in recent years a steadily diminishing factor in the foreign supply of this grain. The bulk is contributed by Denmark, whence the annual imports into the United Kingdom in the nine years 1875 to 1883 ranged generally from 750,000 cwts. to just over a million cwts., except in three of these years, 1878-80, for which the annual average was two million cwts. During the last six years the exports of Danish barley to this country have fluctuated between 158,000 cwts. in 1895 and 676,000 cwts. in 1894, but the average annual supply has been only 360,000 cwts. Until 1888 the yearly shipments of Swedish barley to the United Kingdom amounted, as a rule, to between 300,000 cwts. and 600,000 cwts., but in 1889 they suddenly dropped to 65,000 cwts., and they have since shown little signs of recovery; last year only 11,000 cwts. of this grain were imported from Sweden.

Austria is a comparatively new competitor in the barley trade of the United Kingdom; before 1883 her exports to this country were insignificant. The first consignment of any consequence was made in that year, when we received 368,000 cwts., but, although this quantity has since been exceeded on six occasions, the trade statistics of this country afford little evidence of any development in the imports of barley from Austrian territories.

For some years prior to 1878 Turkey contributed annually upwards of three million cwts. to our supply of foreign barley, but soon after the outbreak of the Russo-Turkish war the imports of barley from Turkey fell considerably, and for several years they were comparatively unimportant. A temporary recovery took place in 1883, but it is only since 1890 that the yearly consignments have approached the level they attained before 1878. The annual imports of barley from Roumania have never fallen below a million cwts. for the past 18 years. In 1882 and 1883 they amounted to 5,720,000 cwts. and 4,461,000 cwts. respectively; but they have since ranged from two million to three million cwts., except in 1884, 1892, and 1893, when the annual importation was about 1,400,000 cwts.

Two countries which have recently augmented their consignments of barley to British markets are the United States and



Chili. During the past five years the average yearly export of barley from the United States to this country has exceeded one million cwts. The annual supplies of barley from Chili have shown a progressive increase since 1890, the maximum yearly consignment from this source having been 980,400 cwts. last year.

An approximate view of the relation of the net imports of barley to the total supply of that grain available for all purposes in the United Kingdom may be obtained from the table below, which shows the average annual supply from all sources for successive periods of three years since 1885. In estimating the amount of home-grown barley entering into the annual supply it has been assumed that the quantity available in a calendar year would be made up of one-third of the crop harvested in that year and two-thirds of the production of the previous year.

Periods.	Average Annual Acreage.	Average Annual Supply from Home Production.	Average Annual Net Imports.	Average Annual Total Supply available for all Purposes.	Per-centage of Net Imports to Total Supply.
	Acres.	Qrs.	Qrs.	Qrs.	
1886-88	2,309,171	9,593,923	4,579,673	14,173,596	32·3
1887-89	2,270,746	9,233,395	4,923,468	14,157,064	34·8
1888-90	2,286,090	9,283,861	5,151,296	14,435,157	35·7
1889-91	2,297,505	9,654,695	4,792,498	14,447,193	33·2
1890-92	2,265,709	9,824,896	4,500,280	14,325,176	31·5
1891-93	2,249,194	9,677,996	5,078,890	14,756,886	34·4
1892-94	2,239,002	9,246,753	6,359,991	15,606,744	40·8
1893-95	2,280,892	9,193,703	7,231,196	16,424,899	44·0

The influence of the droughty season of 1893 on the foreign supply, to which attention has already been directed, is very apparent in the figures shown in the above table. But omitting the years affected by the exceptional circumstances of that season, there would seem to have been since 1885 no development of foreign competition in the barley trade of this country so far as concerns the volume of imported grain. It is to be observed, however, that, although there has been until quite recent years relatively little or no expansion in the supply of foreign barley, one important change which has been in progress during the past twenty years has been the diversion of the import trade towards these centres of production whence the cheaper varieties of barley are now obtained; a notable instance of this being the steady rise in the imports from Russia, and the decline of the trade with the countries of Western Europe, which is illustrated in the table on page 116.

An examination of the declared values of the barley received from various countries shows that the average value of the Russian grain has been lower, as a rule, than that from any

other country, the difference in one year having amounted to as much as 16s. per quarter. The supply from Russia constitutes so large a proportion of the total importation, that the average value of barley imported from all sources cannot be regarded as a satisfactory indication of the prices of the foreign grain which comes into competition with English malting barley. Some idea of the relative values of the various kinds of imported barley may, however, be obtained from the following comparison of the average value per quarter of 400 lbs. of this grain imported from certain countries with the price of British barley as ascertained under the Corn Returns Act :—

Description.	1888-90.	1889-91.	1890-92.	1891-93.	1892-94.	1893-95.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
British barley	27 5	27 7	27 8	26 8	25 5	24 0
Imported barley from—						
Austria -	29 5	30 6	30 6	28 9	27 7	27 2
Holland -	29 2	28 10	29 10	29 9	29 6	27 11
Germany -	27 11	28 10	29 6	28 9	27 6	26 4
France -	27 10	28 2	27 10	27 6	26 8	25 10
Sweden -	26 0	26 7	26 3	25 5	25 10	24 7
Denmark -	27 3	27 7	27 2	25 9	24 10	24 0
Turkey -	21 11	22 5	23 2	23 1	21 9	20 3
Roumania	19 8	20 11	21 6	20 10	18 5	16 8
Russia -	17 9	19 8	19 7	18 3	14 11	14 2
United States -	28 8	27 5	27 0	26 3	25 2	23 2

From the foregoing comparative statement of values it would appear that the barleys imported from Holland and Austria hold the premier position, and that the small quantity of grain received from those countries and from France and Germany is of a higher value than British barley. Scandinavian and American barley seems to be about equal in value to that grown in this country, while that imported from Turkey, Roumania, and Russia is apparently an inferior kind of grain, Russian barley usually realising the lowest price in the market.

## ROTTENNESS OF TURNIPS AND SWEDES IN STORE.

By Prof. M. C. Potter, M.A., F.L.S., Durham College  
of Science.

On opening the pits or camps in which swedes\* have been stored during the winter it is frequently found that many of the roots are quite rotten: this was especially the case in the neighbourhood of Newcastle-upon-Tyne, in the spring of 1895, and similar conditions were observed in many pits in the spring of the present year. This rotten state of the roots is generally attributed to the action of the frost, but, as will appear later, the severity of the weather is not the chief agent in causing the decay. Some of the roots are quite soft and reduced to pulp with a most offensive smell, others when cut open may be found partially sound with the rotting portion showing a brown discolouration. The latter are covered at their extremities with a thick felt of grey mould, sometimes extending over the whole surface of the root, from which a fine cloud of dust arises when shaken; at the same regions numerous small, black, or dark purple bodies, varying in size and of irregular shape, may also be observed.

No single cause can be found to explain these appearances, the soft, rotten roots are found infested with innumerable bacteria, but how far these are responsible for the decay and to what extent actual freezing is accountable are questions which cannot at present be answered, but in the case of the roots covered with the grey mould I have been able to trace the decay to a definite filamentous fungus.†

An examination of the partially rotten roots with the microscope reveals the presence of numerous hyphæ, rich in protoplasm, pervading the whole mass and branching in all directions. The grey mould, on microscopical examination, is seen to consist of a number of filaments projecting into the air. These filaments branch near the apex (Fig. 8) and bear a number of conidia, which are visible to the naked eye as the tiny cloud of dust already mentioned. The branching of the filaments which bear the conidia, and the character of the conidia themselves, show that we have here a fungus belonging to the genus *Botrytis* (of the section *Polyactis*).

The fungi which are comprised in the genus *Botrytis* are very common and include some of the most destructive forms. In many cases it has been shown that the same fungus may have

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\* Swedes are generally mentioned in the text as they are more commonly stored in the pits, but wherever spoken of they may be understood to include turnips; in fact, the latter are more readily attacked by the disease.

† A filamentous fungus consists of a number of thread-like cells or hyphæ, a collection of these being known as a mycelium; reproduction is effected by means of special cells which may germinate and give rise to a new fungus, these according to their mode of origin being termed conidia, spores, ascospores, &c.



two distinct methods of reproduction and hence appear under totally distinct forms, which were thus often described under different names before their connection had been established. The fungus in question affords a very good example, one of its stages being known as *Botrytis* and the other as *Peziza* (*Sclerotinia*). In the one stage, which may be termed the *conidial stage*, a number of conidia—small oval bodies—are produced on branches of the mycelium projecting into the air. The conidia are reproductive cells which, under favourable conditions, germinate, protruding a germ-tube (Fig. 1) capable of growing into a new fungus. The production of conidia may last for some time, but eventually the time comes when the fungus is no longer capable of producing them, and the small black bodies previously mentioned commence to be formed. These bodies consist of a number of fungal hyphæ which have branched repeatedly until they have become firmly webbed together to form a compact structure known as a sclerotium, white at first, but when mature assuming the characteristic dark colour. The sclerotia are especially adapted as a resting stage, they contain a supply of reserve material and may remain dormant for a considerable period; when, however, subjected to favourable conditions they may germinate, protruding a number of tufts of fungus-threads bearing conidia as before.

The sclerotia have also another method of germination, instead of producing conidia a short stalk is protruded, which expands at its extremity into a small cup. The inner surface of this cup is lined with a number of elongated special cells, termed *asci*, in the interior of each of which eight small cells are developed (*ascospores*). These cup-like structures with *asci* are common (some attaining a diameter of two to three inches), and are characteristic of a group of fungi known as *Pezizas*. The *ascospores* on germination may produce a new fungus. This we may term the *Peziza-stage*.

The above is a brief account of the complete life-history of these fungi, it must, however, be noted that the full cycle has not been established for all; some, for instance, are only known in the conidial stage, and others only in the *peziza-stage*. The *Pezizas* are only developed upon the sclerotia, but the exact conditions under which a sclerotium produces conidia or *Pezizas* are at present undetermined.\*

The particular form† we have now under investigation proceeds to the development of conidia and sclerotia, but at present I have not found any trace of a *peziza-stage*.

\* Münter considers that some sclerotia require a rest of  $1\frac{1}{2}$  years before producing the *Peziza*.

† In the *Botanische Zeitung*, 1886, de Bary published the result of his investigations upon *Sclerotinia* (*Peziza*) *sclerotiorum*, a parasite upon various roots and tubers when stored in cellars during winter, and also upon various seedlings—*Zinnia*, *Petunia*, &c. He gives an account of the mode of life of the parasite, including the conditions under which the plants are infected and the manner in which their tissues are destroyed.

In the *Annals of Botany*, Vol. II., we are indebted to Professor Marshall Ward

In a consideration of the cause of rottenness of the swedes in the pits and the presence of a *Botrytis* upon those which are decaying, the first problem to solve is whether this fungus is directly responsible for the decay, and therefore a parasite, or whether it is merely a saprophyte living upon the roots which had already been killed. To answer these questions it was necessary to undertake a series of special cultures to prove whether the fungus had the power of penetrating and subsisting upon the living tissue. The method employed was to cultivate the fungus both upon sterile pieces of swede, turnip, potato, and also upon turnips growing in the garden.

In the first series of experiments test-tubes and small glass bottles with the mouth plugged with cotton wool were employed, having been previously sterilized by exposure to a dry heat of at least 120° C. for one hour, and often to a higher temperature for a longer period. Pure sowings of conidia could be readily obtained from the swedes in the pits; a decaying piece cut off with a sterilized knife and inserted into a sterile tube produced a crop of conidiophores and conidia in a few days, which were found to be free from any foreign conidia. Pieces of perfectly sound swedes were then first cut into blocks by means of a knife sterilized before each cut by heating in the flame of a bunsen burner, and these blocks were again recut with the same precautions into the required shape for insertion into the bottles or tubes. The conidia were sown by means of a sterilized needle upon the prepared pieces of swede, which were then quickly introduced into the tubes, the cotton wool plug being withdrawn with sterilized forceps and immediately replaced. In the course of two or three days the spot where the conidia were sown was indicated by a brown patch, and a fine mycelium could be seen at this place; the brown discolouration gradually proceeded throughout the entire block, while at the same time the mycelium was actively developing, with the result that in about a week the whole piece became brown and rotten, and covered with a thick felt of aerial hyphæ.

The germination of the conidia takes place very readily, and can be easily observed in a hanging drop. The germ-tube is protruded and soon grows out into a short hypha; if the conidia are sown in water the development of the hypha is very limited, but if sown in a nutrient solution the hypha soon branches,

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for the publication of his researches on a *Botrytis* which caused an epidemic upon lilies in the damp summer of 1888; he furnishes a complete account of the biology and life-history of the *Botrytis* and its action in secreting a ferment which causes the dissolution of the cell-walls.

Frank (*Krankheiten der Pflanzen*, 1896) has described a disease of the rape (cole-seed) prevalent in the neighbourhood of Leipzig, caused by a fungus which produces both *Botrytis*-conidia and also sclerotia upon the stems of the infected plants. The sclerotia on germination gave rise to a *Peziza*. He was able to infect healthy plants with the conidia and also quotes the experiment of Hamburg, who infected the plants from ascospores. Frank considers the *Botrytis* to be *B. cinerea* and a stage in the cycle of *Sclerotinia* (*Peziza*) *sclerotiorum*.







Fig. 1.

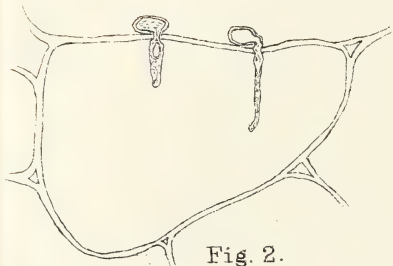


Fig. 2.

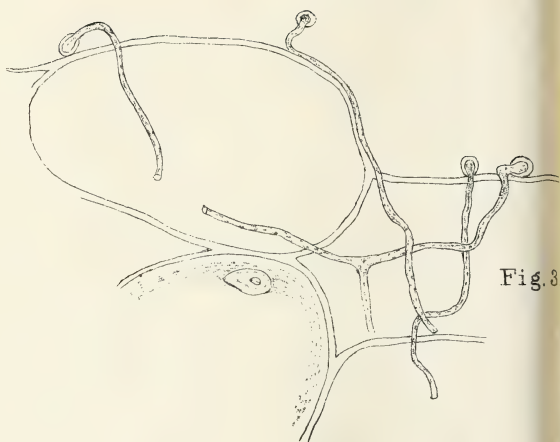


Fig. 3.

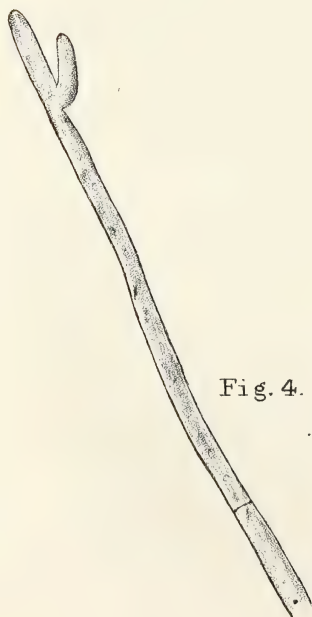


Fig. 4.

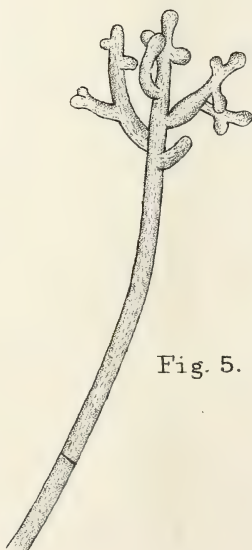


Fig. 5.

giving rise to a branched and septate mycelium, and the tassell-like organs of attachment described by de Bary and Marshall Ward may be observed. The germination can also be readily followed upon a piece of turnip. For this purpose a small block of turnip was carefully cut in the manner described above, thickly sown with conidia, and then placed in a sterile tube plugged with cotton wool. On examining sections taken after an interval of 18 hours, the conidia were found to have germinated while lying upon the surface, and to have protruded a short germ-tube, which had perforated the outer cell-wall and was making its way across the cell (Fig. 2). [In his paper upon the Lily disease Prof. Marshall Ward has shown that the hypha perforates the cell by means of a ferment, secreted at the tip of the germ-tube, which is able to soften and dissolve the cellulose wall. In a particular case he describes, the cell-wall was pierced in 35 minutes from the time of the hypha coming in contact with the wall.] A section made at the end of 24 hours after sowing showed that the hyphæ had penetrated more deeply into the cells and commenced to branch (Fig. 3): sections taken later showed them gradually spreading throughout the piece of turnip until it became thoroughly intersected by hyphæ (comp. Fig. 9).

The fungus does not confine itself to merely passing through the cells in turn, but is able after softening them to work its way in the thickness of the cell-walls. Figure 9, taken from a living turnip, shows the ramifications of the fungus among the cells, many of the hyphæ passing in the intercellular spaces. In the living state the plant-cell consists of a cellulose wall immediately enclosing and in close contact with the protoplasm, in which numerous cavities full of cell-sap are distributed. When healthy the plant-cell is turgid, that is, it contains so much cell-sap that its walls are stretched and the cell distended. Besides having the power of dissolving the cell-wall, the hyphæ also secrete a poison in the region near the growing point; this kills the protoplasm, turning it brown; the distended cells then lose their turgidity, and the sap escapes into the intercellular spaces. We thus see how the hyphæ as they spread cause the brown discolouration and rottenness, the fungus, living upon the cells as it destroys them, gradually extends through the whole, and softening the cell-walls, which become permeated by the cell-sap as it escapes, reduces the entire mass to a pulpy consistency, rendering it completely brown and rotten.

The development of the aërial hyphæ does not take place till a few days after sowing, and from these the conidia are produced. A hypha about to become a conidiophore branches near its apex (Fig. 4), with the formation of short branches projecting on all sides, which again branch (Fig. 5). At the extremities of the tertiary branches numerous small projections are now protruded (Fig. 6), and from each of these a conidium is developed (Figs. 7, 8). The conidiophores are septate, and sometimes branch near the base, forming several clusters (Fig. 13) of

conidia, the lower portion being of a light brown colour, the upper, where the conidia are produced, white. The development of the conidia proceeds for some time with great rapidity, and towards the close of production of the conidia the hyphæ immediately below the surface of the turnip, or sometimes upon the surface, are aggregated into the small black masses previously described as sclerotia.

So far we have seen that *Botrytis* can be readily cultivated in test-tubes upon pieces of fresh turnip or swede as a laboratory experiment, but it remains to be shown whether the fungus can flourish as a parasite on actually living plants in the field. Selecting certain sound and healthy turnips grown specially in the College Botanical Garden, a small conical piece was removed from one side of each "bulb," and conidia sown upon the freshly cut surface, the piece being then quickly replaced. On examination after a week or ten days the surface in some cases had turned brown, and the turnip when pressed was found to be soft in the interior. In a short time conidiophores bearing conidia might be observed upon the cut surface, and also emerging from the uninjured parts bordering upon the cut. When cut open these turnips were found to be more or less decayed and brown in the interior, the discolouration advancing from the spot where the conidia had been sown. Other plants, after being allowed to grow for a longer period, say three weeks, when examined showed a much more extended decay, the disease having spread almost throughout the entire "bulb." The Figure 10 represents a drawing of a white globe turnip in an advanced stage of decay, infected with conidia on September 20th, and removed from the garden on October 11th. It was cut open and the drawing made on the same day. On microscopical examination the discoloured portion was found pervaded by hyphæ; in the course of a few days the exposed surface was covered with numerous conidiophores bearing conidia, the mycelium having in the meantime extended over the only remaining sound part; sclerotia also were developed subsequently. To further demonstrate that these hyphæ really belonged to the *Botrytis*, a series of six sterile tubes were prepared, and into each of these pieces cut with a sterilized knife from one of the infected turnips in the garden were introduced. The pieces selected showed a larger or smaller amount of disease, one having only a few brown cells. In every instance the discolouration spread throughout the entire piece, and numerous conidiophores, and afterwards sclerotia characteristic of the *Botrytis*, were developed as before.

These experiments have fully proved that the *Botrytis* lives as a parasite upon turnips and creates great havoc among the roots in the pits; but, as I shall presently show, this fungus attacks the potato also, and may be directly spread from one to the other.

Upon the dead and decaying potato haulms and leaves which are left in the fields when the potatoes have been dug up,



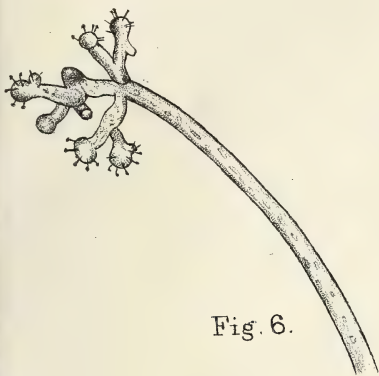


Fig. 6.

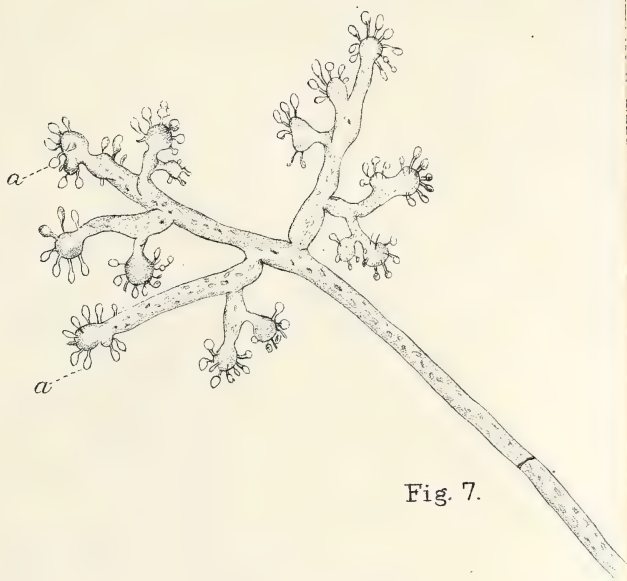


Fig. 7.

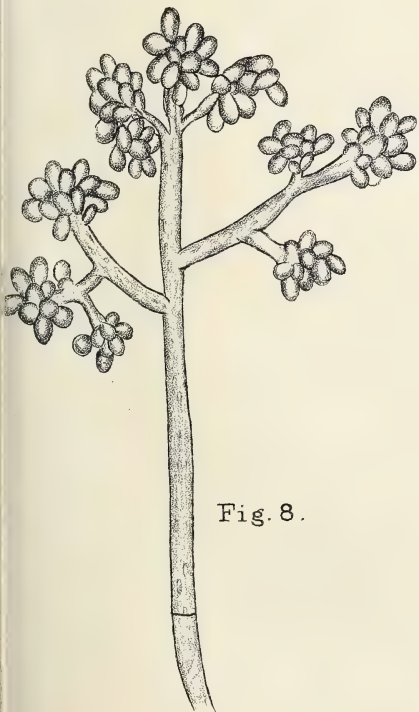


Fig. 8.

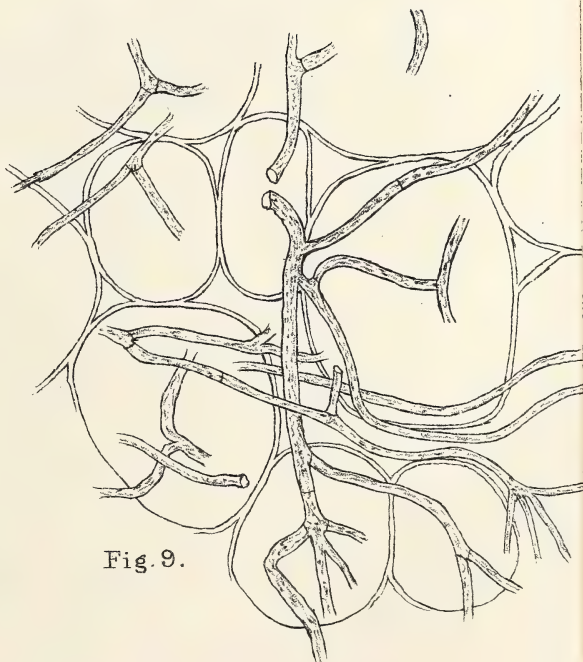


Fig. 9.



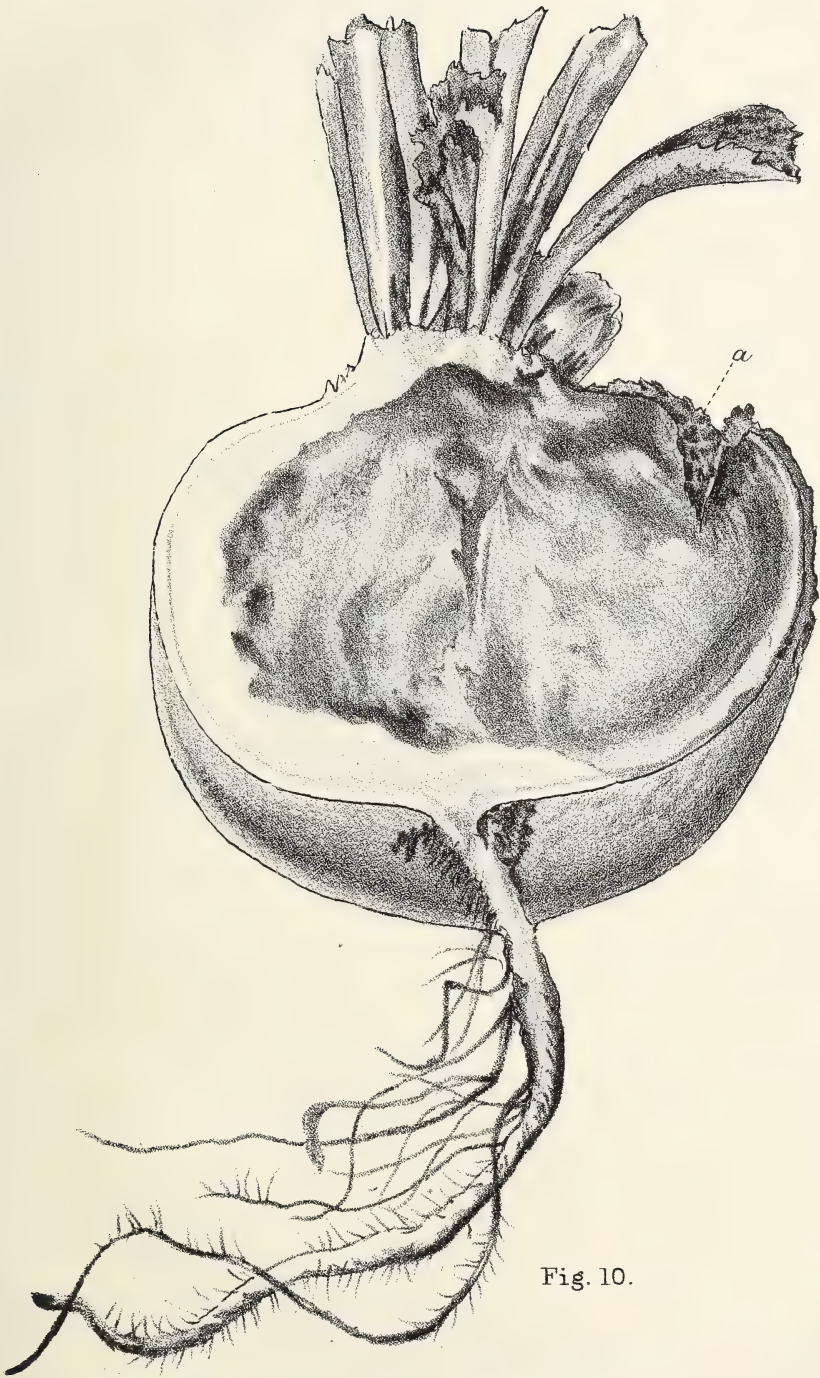


Fig. 10.





I have observed numerous tufts of grey mould, which proved to be a *Botrytis*, and also black patches of irregular shape (Fig. 11) both upon the decorticated haulm and in the central hollow of the stem. The black patches are the sclerotia of a fungus seemingly identical with the one described by Worthington Smith, under the name of *Peziza postuma*, as a "New disease of potatoes" which had appeared in Ireland and near Aberdeen. This disease is also described by Professor A. Blytt as being very destructive in Norway, near Stavanger. According to de Bary, the disease appears upon the foliage shoots soon after flowering, the fungus being identical with *Peziza sclerotiorum*.

The sclerotia are very common in this neighbourhood upon the dead potato haulms. When placed in a damp atmosphere, as, for instance, in a test-tube with a little water at the base and plugged at the top, they readily germinate in the course of three or more days, according to the temperature, producing conidiophores and conidia precisely similar to those described upon the decaying swedes and their sclerotia (Figs. 12 and 13). As far as my observations go, the sclerotia always give rise to conidia, and never to a *Peziza*.\* The sclerotia, again, will germinate when buried in the ground; a flower-pot nearly filled with earth was taken and a number of sclerotia still attached to the potato-haulms were buried in it, the pot being then well watered and kept under a bell-jar. After a few days a number of conidiophores with conidia appeared above the surface of the soil, being gradually followed by others as they were able to make their way to the surface.

Considering that the conidia on the potato-haulms are especially to be found when the swedes are being pulled, topped and tailed, and led to the pits, it is a matter of some economic importance to determine whether these conidia can infect the swedes. This I have found to be the case; the conidia from the sclerotia upon the potato-haulms, when sown with all possible precautions to prevent the admixture of other conidia or spores, upon pieces of turnip and swede, germinated, the substratum became discoloured and rotten, and covered with hyphæ, while conidiophores, and subsequently sclerotia, were developed. There can be no doubt, therefore, that the fungus which causes so much destruction in the swede pits is identical with that which produces the sclerotia upon the potato-haulms, and without wishing to preclude the possibility of the conidia being derived from other sources, it may be insisted upon that the potato-haulms forming a nidus for this fungus are a source of danger to the swedes.

A great many important facts have been elicited with regard to the conditions under which *Botrytis* can gain an entrance into its host. The species of *Botrytis* have been more usually

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\* Other observers, notably Worthington Smith and Axel Blytt, only record a *peziza*-stage.

regarded as saprophytes, and in this state may be found living upon dead vegetable matter; they can also be cultivated with ease upon various nutrient solutions. But *Botrytis* can also undoubtedly live as a parasite, and it would seem to have gradually acquired a parasitic habit. This is to some extent borne out by the experiment upon the action of the frost described later, showing more rapid development as a saprophyte than as a parasite, and Professor Marshall Ward has drawn attention (Croonian Lecture, 1890) to the fact that the infection takes place more easily in living tissues when the hyphæ have been invigorated by saprophytic nutrition for a short time upon adjacent dead tissue. A favourable point of infection is thus presented by a wound or bruised surface such as is frequently found in the roots, and the rottenness can often be traced to such an origin. But having once established itself as a parasite upon any particular host, the *Botrytis* attacks plants of the same kind with gradually increasing vigour. Kissling has shown that the conidia from a saprophytic mycelium at first only develop slowly within the living tissue, but the second generation developed from the conidia of this parasitic mycelium grows more vigorously in a plant of the same kind, and the succeeding generation produces a still more virulent mycelium; that is, if one may so express it, the faculty is improved by cultivation and the fungus becomes gradually educated to the parasitic habit. The conidia, therefore, produced from the hyphæ parasitic upon a swede will effect an entrance more readily into another swede and destroy it more rapidly, and so the fungus proceeds invigorated by its life in each successive swede attacked.

Certain conditions are necessary for the germination of the conidia, namely, a sufficiency of moisture, temperature, and oxygen. Provided moisture and air are present, germination may take place slightly above the freezing point. A conidium falling upon a freshly-cut surface of swede is supplied with moisture for its germination and provided the atmosphere is sufficiently damp to prevent evaporation from the cut surface, its germ-tube can then perforate the first cell-wall and gain an entrance into the plant, infecting it in the course of a few hours as previously shown. But if the cut surface has become dry, the conidium would in all probability fail to infect it. The supply of moisture would be inadequate for germination, and also in a comparatively short time a wounded surface is healed over by the formation of a corky layer; the suberized cell-wall would then have more power of resisting the action of the ferment secreted by the germ-tube, and infection would be rendered more difficult.

The swedes in the pits are often found to be attacked at the ends, and the examination of numerous specimens shows that, while the central part is often sound, the extremities are rotten, as if the disease were advancing towards the centre. In the experiments previously described, the conidia were always



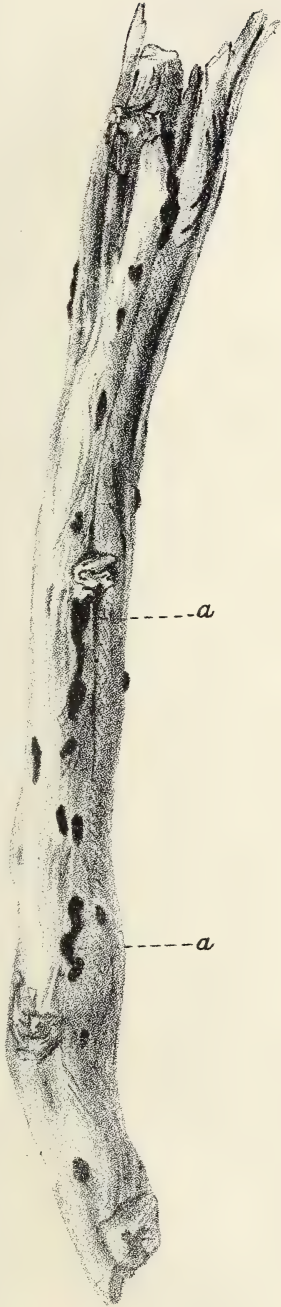


Fig. 11.



Fig. 12.



Fig. 13.



sown upon a cut surface, where the germ-tubes could directly penetrate the plant; further, all attempts to infect the roots by sowing conidia upon the uninjured surface failed. It would therefore appear as if the germ-tubes had not the power to pierce the outer rind, and it is plainly shown that the surfaces exposed by cutting off the tops and tails are the vulnerable points of attack. The swedes are pulled in the autumn or early winter, and the tops and tails cut off, and this is the very time when countless conidia are floating in the air. I have seen, for example, a field with the swedes lying in rows ready for carting, or even the pits being made in a field, side by side with another field in which potato-haulms were decaying and giving off *Botrytis*-conidia. There is thus every opportunity for some of these conidia to be sown upon the cut surfaces of the roots, and it is small wonder that so many are infected even before they find their way into the pits, especially when the atmospheric conditions at the end of the year are just those favourable to the germination of the conidia. The damp atmosphere, too, in the pits is particularly suitable for the growth of this fungus. Having destroyed one root, it spreads to the neighbouring ones, extending over the surface until it finds a wound through which it can enter; at the same time the countless conidia set free will be carried from one root to another, gaining in infective power in each successive generation.

#### ACTION OF FROST.

Many vegetable tissues, especially when containing a large amount of water, are destroyed by the frost. Turnips and swedes form no exception. If pieces of swede are placed in test-tubes and frozen artificially the cells are killed and lose their turgidity, the whole becoming reduced to a soft and rotten mass. To test the action of severe freezing upon the roots and the *Botrytis*-conidia, 12 sterilized test-tubes (*a*—*l*) were taken, and pieces of swede introduced into 11 of them; upon three of these (*a*, *b*, *c*) conidia were sown, and in the twelfth (*l*) was placed a little water containing conidia. These test-tubes were then all frozen by immersion in a mixture of ice and salt, a temperature as low as  $-10^{\circ}$  C. being maintained for five hours, falling to  $-15^{\circ}$  C. for the intermediate three hours. The temperature of the test-tubes was then allowed to rise slowly. After undergoing this process of freezing three more of the tubes (*d*, *e*, *f*) were sown with the conidia which had been frozen in the tube *l*, a little of the water containing the conidia being taken out with a freshly drawn pipette and dropped upon the blocks of swede, the plug being only removed for the purpose for an instant. Three others (*g*, *h*, *i*) were sown with conidia which had not been frozen, and the remaining two (*j*, *k*) were not opened but kept as control tubes. The 11 tubes were then kept at a temperature of  $22^{\circ}$  C.



On the swede in the three tubes (*a, b, c*) upon which conidia had been sown previous to freezing, a mycelium was very soon found to be growing; this mycelium developed very copiously, filling up the test-tube in the neighbourhood of the piece of swede. By the end of 10 days both conidia and sclerotia were produced. A similar development was found on the three pieces of swede which had been sown with frozen conidia (*d, e, f*). On the three (*g, h, i*) which were sown with unfrozen conidia the development of the mycelium proceeded more slowly. To further test the power the conidia have of resisting severe frost, several of the conidia frozen in the test-tubes were sown in a hanging drop; all germinated and produced a short hypha, but since they were sown in water only their further development could not proceed.

This experiment shows that the activity of the conidia is not affected by the frost, and that they can retain their vitality after being subjected to an extremely low temperature, and afterwards may develop a mycelium which can live as a saprophyte upon the frozen roots. Although no actual measurements were made, yet the growth of the mycelium was distinctly more vigorous upon the pieces of frozen swede than upon those which were unfrozen, indicating that this fungus develops more rapidly as a saprophyte than as a parasite.

In very severe weather the effect of the frost is to kill and rot the roots, which might also prepare the way for the *Botrytis*, but it has been shown that the fungus attacks and destroys the root quite independently of any action of the frost, and this is further borne out by the prevalence of the disease after the late very mild winter.

#### MEANS OF CHECKING THE RAVAGES OF *Botrytis*.

In order to check the ravages of this fungus we must seek some way of entirely destroying it. Naturally the most feasible and effective means would be to ensure the destruction of the sclerotia, and hence it is evident that all decaying potato-haulms and decaying roots, as well as the swede and turnip tops, together with rotting vegetable matter generally, should be burnt as soon as possible. Merely burying the decaying material (unless it might be at a considerable depth) is of little avail, for, as has been shown in an experiment previously mentioned, the sclerotia when buried germinated freely, producing tufts of conidia above the soil. How often do we find not only turnip-tops, &c., but the rotten and discarded roots lying in heaps or scattered on the fields, ready in the spring to produce a brood of conidia. And, in this connexion, it may be observed, that the *Botrytis* does not confine its ravages to roots and potato-haulms:—Kissling has traced an epidemic on *Gentiana lutea* in the Jura, and also the decay of chestnuts in cellars to this fungus; Zimmerman has shown how it attacks many plants in greenhouses, especially in winter, the conidia from decaying

leaves infecting the living plants; Eidam, that it attacks cabbages; Klein and Sorokin, the male inflorescences of juniper, *Thuja*, and yew; Tubeuf and Behrens, *Pseudotsuga Douglasii*; Behrens, the hemp; Müller-Thurgau, fruits, especially pears; Ward, that a "species" of *Botrytis* caused an epidemic upon lilies; it also attacks cucumbers, melons, kidney-beans, dahlias, artichokes, onions, &c. The *Peziza*-stage of *Sclerotinia sclerotiorum* (which is said to have no *Botrytis*-stage) also causes considerable destruction among turnips, carrots, beet, and chicory roots, as described by Coëmans and de Bary, and the latter author has shown how this fungus attacks seedlings, especially those of *Petunia* and *Zinnia*. It is therefore of the utmost importance that the number of conidia—or ascospores—set free in the spring should be reduced to the smallest possible limit, and no better means could be devised than by making a bonfire of all refuse within range.

Again, too much care cannot be bestowed upon the pits; the damp, steamy atmosphere is, as has been said before, one of the conditions most favourable to fungoid growth, and there is every reason to believe that proper ventilation and more effective drainage would materially lessen the loss caused by this pest. The closer the roots are packed together the greater is the chance of their decay, and an alleviation of the mischief might, perhaps, be effected by placing layers of dry straw between the layers of roots.

The greatest vigilance should be displayed to prevent any unsound roots being stored with the healthy ones, and, further, care should be exercised to leave the minimum amount of cut surface when the roots are pulled and prepared for store, a dry day being preferably selected for this purpose.

One commonly finds that turnip or swede tops, and sometimes potato-haulms, are placed on the roof of the pits; these I have often found infected upon the pits and producing their crop of conidia. It is a practice which cannot be too strongly condemned.

It would be unsuitable here to enter upon the vexed question of nomenclature; suffice it to say that as far as I have been able to determine all the fungi described here, found upon the swedes in the pits, on the dead and decaying leaves, and upon the potato-haulms, are the same, namely, *Botrytis cinerea*, a fungus which is acknowledged to be the conidial stage of *Sclerotinia* (*Peziza*) *fuckeliana*, but the *peziza*-stage never having appeared, it is impossible to decide whether we have the conidial form of *S. fuckeliana* or one which very closely resembles it. The *Botrytis* in question appears to be identical with that described by Kissling, which produced the epidemic upon Gentians, and it may be that this *Botrytis* has lost its *peziza*-stage and is gradually degrading to a condition similar to the one described by Marshall Ward, in which the *sclerotium*-stage is wanting; or the conditions under which it grows may be favourable to the formation of conidia but not to a *Peziza*. Our

*Botrytis* also appears to be identical with that of Frank, which, however, has the peziza-stage.

It is possible that this *Botrytis* is the conidial stage of *S. sclerotiorum*; but, again, this point cannot be definitely ascertained until the peziza-stage is found. The supposition would be correct if the sclerotia on the potato-haulms in this country and those near Stavanger are identical. The Norwegian fungus and the one described by Worthington Smith produced the *Peziza*, and were determined as *S. sclerotiorum*. On this assumption *S. sclerotiorum* under certain conditions, as in some localities, produces a *Peziza*, but in other localities a *Botrytis*, which differs only slightly from *B. cinerea*, so that the two have not been separated from each other. This is at variance with de Bary's statement that *S. sclerotiorum* does not produce a *Botrytis*.

#### SUMMARY.

The destruction of swedes and turnips in store is largely caused by a species of *Botrytis*, a common fungus having the faculty of living both as a parasite and a saprophyte.

This fungus is propagated by means of conidia, which readily germinate on the moist surface of a wounded root, and can infect it when living either in the field or stored in the pit, the rottenness proceeding as the fungus extends. When pure cultures of the conidia obtained from diseased roots in the pits were sown upon perfectly sound sterile pieces of swede in test-tubes, under carefully guarded conditions, the sound swede became infected, and hyphæ were developed which rapidly extended until the whole substratum was rendered brown and rotten. A similar experiment tried on turnips actually growing in the ground produced precisely the same results, the infection from the pure sowings of conidia spread throughout the roots, leaving them thoroughly diseased, and in appearance exactly resembling those found attacked in the pits, and the fungus pervading the rotten mass was found to be the same *Botrytis*.

The *Botrytis* is also found living upon decaying potato-haulms, upon swede and turnip tops, and on decaying vegetable matter generally. The conidia from the decaying potato-haulms when sown upon sound swedes, produced exactly the same disease as was exhibited by those attacked in the pits. The conidia from these sources may thus be the origin of infection for the roots, hence potato-haulms, turnips, and swede tops, &c. should never be left to decay on the fields but should be carefully collected and burnt as soon as possible to prevent the production and liberation of the conidia.

Infection takes place most readily through a wound. Therefore in preparing for store as little cut surface as possible should be made, and all bruising of the roots should be avoided.

In every case great care should be taken to ensure thorough ventilation and drainage of the pits; the roots should be pulled



and prepared in dry weather and kept as dry as possible. The pits ought not to be placed on the same spot year after year, and the roots should be carefully examined to see that none with even the slightest sign of decay are stored among the sound ones.

The fungus gains an increased power of infection in each successive root, and hence has an exceptional ability to work destruction when the roots are closely in contact with each other in the pits.

The frost is answerable for a certain amount of damage independent of that caused by the fungus; but severe freezing does not destroy the vitality of the conidia, in fact the hyphæ penetrate the roots killed by frost more rapidly than sound ones.

*Note.*—It must not be supposed that *Botrytis* is the only parasite attacking the roots; other fungi and bacteria play their part, but the life-history of these forms is still under investigation.

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#### EXPLANATION OF FIGURES.

1. Conidium of *Botrytis* with germ-tube (*a*) (mag.).
  3. Cell of swede with two conidia sown on the surface of the exposed cell-wall; the conidia have germinated and forced the germ-tube into the cell 18 hours after sowing (mag.).
  3. A similar piece of swede showing the conidia and developing mycelia; 24 hours after sowing (mag.).
  4. Young conidiophore with one branch near the apex (mag.).
  5. Young conidiophore showing the further development of the branching (mag.).
  6. Branching of conidiophore showing the small projections upon which the conidia are developed (mag.).
  7. Conidiophore and partially developed conidia (mag.).
  8. Conidiophore with clusters of ripe conidia (mag.).
  9. Portion of the turnip in Fig. 10 showing the ramification of the fungus among the cells (mag.).
  10. White globe turnip infected with *Botrytis* at the cut (*a*) on the right-hand upper surface. Grey mould is seen near the cut and the fungus has almost destroyed the root as shown by the shaded portion in the centre (slightly reduced).
  11. Portion of dead potato-haulm with sclerotia (*a*) (nat. size).
  12. Potato-haulm with sclerotia germinating and producing tufts of *Botrytis* (nat. size).
  13. Conidiophores and conidia from one of the sclerotia on the potato-haulm ( $\times 16$ ).
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## FOUL BROOD OR BEE PEST.

Foul brood or Bee pest is the most terrible scourge of apiculture. It spreads so rapidly by contagion in a single season, that, unless precautions are taken, a whole neighbourhood may become affected, and the chances of successful bee-keeping therein will be seriously imperilled, if not utterly destroyed.

Foul brood is caused by a rod-shaped micro-organism, called *Bacillus alvei*, which increases by splitting, and has, under certain conditions, the power of forming spores. It is important to note that bacilli are present in the earliest stages of the disease, but in the latest, when the brood has become rotten and coffee-coloured, or has dried up to a scale, they turn to spores. These represent the seeds of the evil, and retain the power of germinating into bacilli when in contact with a suitable nourishing medium at a proper temperature, even after the lapse of long periods.

These spores are endowed with wonderful vitality. Freezing and boiling, carbolic acid, phenol, thymol, salicylic acid, naphthol beta, perchloride of mercury, as well as creolin, lysol, eucalyptus and naphthaline, which evaporate at the ordinary temperature of the hive, prevent the growth of bacilli, but have no effect on the spores. From this it will be seen how great is the difficulty in curing foul brood, unless the disease is attacked in its earliest conditions.

When stocks are found weak, working languidly, very slightly profitable, and swarming little, foul brood may be suspected. If it is present, an examination of the combs will show some cells (many or few) with dying or dead larvæ in them, and others with their covers sunken or perforated: but the cells of healthy brood are usually compact, and the grubs are plump and of a pearly whiteness. When healthy, the young larvæ are curled up in crescent shape at the base of the cells. On the other hand, if diseased, they will be found extended horizontally in the cell, presenting a flabby appearance, and of a pale straw colour. As they begin to decompose, the colour changes to brown. They then dry up till all that remains of them is a brown scale adhering to the side of the cell. Should the larvæ survive until capping takes place, a few of the cell-covers will be found here and there slightly indented and darker in colour than those of healthy brood. The capped cells will be observed in irregular patches and mostly perforated. On removing the capping, the contents will be seen to consist of a putrid, sticky, elastic, coffee-coloured mass, formed of the rotting larvæ. The bees do not seem to have the power to clean out the foul cells, and so they remain, spreading infection within the hive, until the stock becomes too weak to

defend its stores, when some neighbouring colony probably robs it, and in doing so carries away the seeds of disease and death, which are thus spread, until all the hives of a neighbourhood may be fatally affected.

Hives in which foul brood exists give forth a sickly and unpleasant smell, and when the disease is of a malignant type and in a very advanced stage, the foul odour may be frequently detected even at some distance from the entrance.

It should be noted that chilled brood must not be mistaken, as it very frequently is, for foul brood. In the former the dead larvæ turn first grey, and afterwards become nearly black (never brown, as with foul brood). The larvæ, dead from cold, are also generally removed by the bees, but they seldom attempt to carry out those which have died from disease, unless disinfectants to arrest decomposition are used. Adult as well as immature bees suffer from the pest, but these leave the hive to die.

Experience has plainly shown that with foul brood—as in all epidemic diseases—the weak, sickly, and badly nourished are attacked, and become centres of infection to others. So it often happens that as colonies become weak, bees from healthy hives rob them of their honey, and thus carry off the germs of the disease along with their ill-gotten gains.

Another very important point is that the bee-keeper may himself be the means of spreading the pest by indiscriminately manipulating, first diseased, and then healthy hives, without taking proper precautions to disinfect himself and his appliances. Combs which have contained foul brood retain the spores. The queen lays eggs in the cells and the workers deposit their honey and pollen in them. Both honey and pollen in this way become vehicles for the transport of the disease to the larvæ in the process of feeding by the nurse bees. Under no consideration should infected hives or combs be knowingly exposed to the visits of bees. Carelessness in this respect may work immense mischief to neighbouring stocks and apiaries.

In endeavouring to get rid of foul brood, efforts must be made to raise to a high standard the lowered vitality of the bees, which first enabled germs of the disease to get a footing. This will be effected by keeping only strong stocks, with young and prolific queens, and good wholesome food, combined with cleanliness and proper ventilation.

Foul brood is so extremely contagious that it is advisable at all times to adopt preventive measures against infection. Naphthaline in balls is generally used for this purpose; two of these, split in half, being the proper dose. The pieces are placed on the floorboard of the hive in the corner farthest from the entrance. The temperature of the hive causes the naphthaline to evaporate, and it must be, therefore, renewed as required. All syrup used for feeding should also be medicated with naphthol beta. When the bee-keeper has been in contact with diseased stocks, clothes, appliances, and hands must be washed



with carbolic soap, and other articles disinfected by spraying with a solution of one ounce Calvert's No. 5 carbolic acid in 12 ounces of water.

It was formerly thought that honey was the only source of infection, so that, if bees were starved until they had got rid of the honey carried by them from the diseased hive, a cure would be effected. It is now known that the starvation method, good as far as it goes, has always failed from the fact of its not being supplemented by disinfection of hives and appliances.

When the disease is discovered in a weak colony, the destruction of bees, combs, frames, and quilts, together with a thorough disinfection of the hive, is by far the best course to pursue. The spores are thus annihilated, and the source of infection removed.

If, on the contrary, the colony be still strong, the bees may be preserved by making an artificial swarm of them. They should then be placed in a straw skep and fed on syrup to which three grains of naphthol beta have been added to every pound of sugar used, the naphthol beta being dissolved in alcohol and added to the syrup while still warm.

The infected frames, combs, and quilts should then be burned, and the hive disinfected by being either steamed, or scrubbed with boiling water and soap, and then painted over with a solution of carbolic acid (one part of Calvert's No. 5 carbolic acid to two parts of water). When the smell of the disinfectant has disappeared, the hive will be ready for use. The bees must be confined to the skep for 48 hours, by which time all honey they may have taken with them will have been consumed, and such of the bees as are diseased will have died off. Those remaining should then be shaken from the skep into a clean frame-hive furnished with six frames, fitted with full sheets of comb-foundation, and must be fed with medicated syrup for a few days longer. The skep used as their temporary home should be burnt. In order to avoid chance of robbing, all such work as is here described should be done in the evening, when the bees have ceased flying for the day.

It may be added that in attempting remedial measures of the nature described, it would be desirable, wherever such help can be procured, to seek the advice of a competent expert.

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## AGRICULTURAL RETURNS OF GREAT BRITAIN, 1896.

PRELIMINARY STATEMENT for 1896, compiled from the Returns collected on the 4th June ; and comparisons with previous Years.

CROPS AND LIVE STOCK.	1896.	1895.	1894.	1893.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Wheat - - - - -	1,693,957	1,417,483	1,927,962	1,897,524
Barley - - - - -	2,104,764	2,166,279	2,095,771	2,075,097
Oats - - - - -	3,095,488	3,293,063	3,253,401	3,171,756
Potatoes - - - - -	563,741	541,217	504,454	527,821
Hay from clover & rotation grasses	2,171,966	2,303,431	2,121,904	2,047,008
Hay from permanent pasture	4,638,722	4,760,889	4,852,442	4,270,480
Hops - - - - -	54,249	58,940	59,535	57,564
	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Cows & Heifers in Milk or in Calf -	2,511,675	2,485,820	2,460,086	2,554,624
Other Cattle:—2 Years & above -	1,365,057	1,431,525	1,516,672	1,580,242
"    1 Year & under 2 -	1,306,313	1,190,368	1,217,145	1,354,523
"    Under 1 Year -	1,310,537	1,243,623	1,153,210	1,211,287
TOTAL OF CATTLE -	6,493,582	6,354,336	6,347,113	6,700,676
Ewes kept for Breeding - - -	9,925,587	9,663,129	9,668,002	10,128,676
Other Sheep:—1 Year & above -	6,427,982	6,334,336	6,342,730	6,911,063
"    Under 1 Year -	10,351,760	9,794,680	9,850,768	10,240,595
TOTAL OF SHEEP -	26,705,329	25,792,195	25,861,500	27,280,334
Sows kept for Breeding - - -	393,729	415,210	351,119	308,722
Other Pigs - - - - -	2,485,072	2,469,321	2,038,907	1,804,808
TOTAL OF PIGS - - -	2,878,801	2,884,431	2,390,026	2,113,530

## COMPARISONS with 1895 and 1894.

CROPS AND LIVE STOCK.	INCREASE.				DECREASE.			
	Over 1895.		Over 1894.		Under 1895.		Under 1894.	
	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>	<i>Acres.</i>	<i>Per Cent.</i>
Wheat - - - - -	276,474	19·5	..	..	..	..	234,005	12·1
Barley - - - - -	..	..	8,993	0·4	61,515	2·8	..	..
Oats - - - - -	..	..	..	..	200,575	6·1	187,913	4·9
Potatoes - - - - -	22,524	4·2	59,287	11·8	..	..	..	..
Hay from clover - - -	..	..	50,062	2·4	131,465	5·7	..	..
Hay from pasture - - -	..	..	..	..	122,167	2·6	213,720	4·4
Hops - - - - -	..	..	..	..	4,691	8·0	5,286	8·9
	<i>No.</i>	<i>Per Cent.</i>	<i>No.</i>	<i>Per Cent.</i>	<i>No.</i>	<i>Per Cent.</i>	<i>No.</i>	<i>Per Cent.</i>
Cows - - - - -	25,855	1·0	51,539	2·1	..	..	..	..
Other Cattle, 2 & above -	..	..	..	..	66,468	4·6	151,615	10·0
"    1 & under 2	115,945	9·7	89,168	7·3	..	..	..	..
"    Under 1 -	63,914	5·1	157,327	13·6	..	..	..	..
TOTAL CATTLE -	139,246	2·2	146,469	2·3	..	..	..	..
Ewes - - - - -	262,453	2·7	257,585	2·7	..	..	..	..
Other Sheep, 1 & above -	93,596	1·5	85,252	1·3	..	..	..	..
"    Under 1 -	557,080	5·7	500,992	5·1	..	..	..	..
TOTAL SHEEP -	913,134	3·5	843,829	3·3	..	..	..	..
Sows - - - - -	..	..	42,610	12·1	21,481	5·3	..	..
Other Pigs - - - - -	15,851	0·6	446,165	21·9	..	..	..	..
TOTAL PIGS -	..	..	488,775	20·5	5,630	0·2	..	..

## II.—COUNTY SUMMARY

PRELIMINARY STATEMENT of the ACREAGE under WHEAT, BARLEY, and  
collected on the 4th June 1896, with a

COUNTIES.	Wheat.		Barley.		Oats.	
	1896.	1895.	1896.	1895.	1896.	1895.
TOTAL FOR GREAT BRITAIN }	<i>Acres.</i> 1,693,957	<i>Acres.</i> 1,417,483	<i>Acres.</i> 2,104,764	<i>Acres.</i> 2,166,279	<i>Acres.</i> 3,095,488	<i>Acres.</i> 3,296,063
ENGLAND - -	1,609,255	1,339,806	1,778,779	1,837,850	1,845,739	2,045,477
WALES - -	46,973	44,036	107,702	111,886	241,642	242,198
SCOTLAND - -	37,729	33,641	218,283	216,543	1,008,116	1,068,388
ENGLAND.						
BEDFORD - -	35,230	28,654	23,402	26,120	15,406	20,050
BERKS - -	34,102	24,708	28,816	31,396	30,915	37,740
BUCKINGHAM - -	33,864	24,956	22,488	25,328	27,348	32,770
CAMBRIDGE - -	88,326	81,329	63,238	63,060	44,023	51,930
CHESTER - -	10,035	9,364	1,869	2,152	63,266	62,163
CORNWALL - -	21,734	20,524	32,308	34,908	65,586	65,672
CUMBERLAND - -	3,320	3,596	2,006	2,496	79,522	78,994
DERBY - -	12,900	11,614	7,116	7,642	26,890	28,456
DEVON - -	51,887	43,577	47,141	52,355	120,344	125,141
DORSET - -	21,142	15,693	27,845	30,089	27,420	31,339
DURHAM - -	11,907	9,463	17,776	18,848	35,653	35,425
ESSEX - -	109,064	93,156	99,399	104,141	57,097	66,873
GLOUCESTER - -	45,246	37,509	29,727	32,904	31,277	38,174
HANTS - -	55,602	42,683	45,197	45,955	73,704	81,575
HEREFORD - -	25,883	17,434	21,548	24,314	22,628	25,908
HERTFORD - -	49,046	38,076	34,154	35,793	33,350	38,092
HUNTINGDON - -	27,438	24,011	22,231	23,139	11,423	14,007
KENT - -	47,239	38,399	43,106	45,216	40,169	57,959
LANCASTER - -	12,533	11,537	8,553	8,580	78,149	79,390
LEICESTER - -	20,689	17,578	17,658	17,338	24,792	27,440
LINCOLN - -	161,197	139,280	223,780	226,332	119,854	141,869
LONDON - -	181	205	52	27	135	206
MIDDLESEX - -	3,227	2,923	1,256	1,437	2,994	3,355
MONMOUTH - -	5,949	4,828	5,655	6,166	8,785	9,796
NORFOLK - -	121,702	106,812	209,808	203,980	55,794	69,317
NORTHAMPTON - -	41,322	31,339	50,175	53,484	23,307	28,141
NORTHUMBERLAND - -	6,965	4,637	33,466	36,687	47,043	49,063
NOTTS - -	35,248	30,125	41,282	41,258	32,185	36,634
OXFORD - -	33,285	23,183	44,840	48,460	30,686	37,625
RUTLAND - -	4,344	3,472	11,977	11,246	3,924	4,511
SALOP - -	32,477	23,668	53,762	57,280	42,189	44,711
SOMERSET - -	29,837	22,616	28,304	30,987	27,821	33,053
STAFFORD - -	19,591	16,359	19,065	19,817	38,393	42,777
SUFFOLK - -	97,184	88,204	146,644	143,845	37,804	42,466
SURREY - -	19,837	16,270	9,799	10,852	23,103	26,052
SUSSEX - -	53,768	45,383	13,164	14,486	62,901	71,268
WARWICK - -	33,825	26,929	16,933	18,598	27,486	32,548
WESTMORLAND - -	207	207	812	978	16,722	16,580
WILTS - -	50,592	42,442	44,298	48,492	44,310	53,177
WORCESTER - -	31,965	24,063	12,104	13,693	17,085	21,195
YORK, E RIDING - -	50,836	42,161	78,268	77,880	102,521	112,647
„ N. RIDING - -	19,647	14,893	79,182	81,100	78,564	81,111
„ W. RIDING - -	38,882	35,915	58,545	58,991	84,157	88,277



## —ACREAGE.

OATS in the several COUNTIES of GREAT BRITAIN, compiled from the Returns  
COMPARATIVE STATEMENT for 1895.

COUNTIES. (continued.)	Wheat.		Barley.		Oats.	
	1896.	1895.	1896.	1895.	1896.	1895.
<b>WALES.</b>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
ANGLESEY - -	268	246	1,824	1,789	21,495	22,727
BRECON - -	3,490	3,354	4,830	5,089	14,264	14,357
CARDIGAN - -	5,360	5,140	15,849	16,371	31,259	30,790
CARMARTHEN - -	7,692	7,723	13,332	13,619	35,166	34,821
CARNARVON - -	326	512	6,375	6,401	12,037	12,081
DENBIGH - -	4,852	4,507	15,623	16,474	23,103	27,564
FLINT - -	3,797	3,580	6,346	6,539	12,939	12,794
GLAMORGAN - -	4,858	4,133	8,050	8,867	12,322	13,033
MERIONETH - -	701	638	4,212	4,375	10,132	9,857
MONTGOMERY - -	9,846	9,245	8,670	9,484	23,528	23,709
PEMBROKE - -	2,800	2,397	19,031	19,236	27,790	27,828
RADNOR - -	2,983	2,555	3,560	3,642	12,587	12,637
<b>SCOTLAND.</b>						
ABERDEEN - -	22	1	23,528	17,947	191,898	196,755
ARGYLL - -	..	..	1,763	1,830	18,203	18,052
AYR - -	1,194	980	1,289	1,462	47,175	46,347
BANFF - -	1	3	9,096	7,517	48,379	50,018
BERWICK - -	1,451	975	19,562	20,655	35,156	34,362
BUTE - -	1	..	114	131	5,140	5,090
CAITHNESS - -	8	15	813	886	34,113	34,472
CLACKMANNAN - -	224	215	394	428	3,360	3,532
DUMBARTON - -	784	678	201	288	7,329	7,110
DUMFRIES - -	44	66	452	510	46,283	45,742
EDINBURGH - -	3,237	2,997	5,002	5,709	24,820	24,649
ELGIN, or MORAY - -	560	533	14,239	13,658	21,546	21,758
FIFE - -	7,873	7,075	22,513	23,282	41,500	41,344
FORFAR - -	7,024	6,578	27,620	23,131	51,564	51,652
HADDINGTON - -	4,851	3,519	15,531	16,231	18,435	18,704
INVERNESS - -	8	2	7,049	6,801	30,814	30,364
KINCARDINE - -	381	228	11,299	10,868	30,295	30,927
KINROSS - -	..	..	392	247	6,649	6,588
KIRKCUDBRIGHT - -	38	50	13	104	29,147	27,601
LANARK - -	1,559	1,450	259	293	39,994	39,084
LINLITHGOW - -	793	844	3,193	3,368	10,542	10,461
NAIRN - -	14	16	3,257	3,057	5,681	5,787
ORKNEY - -	..	..	4,539	4,641	33,899	33,837
PEEBLES - -	10	10	322	452	8,611	8,291
PERTH - -	4,222	3,708	13,251	15,179	68,991	67,752
RENFREW - -	1,320	1,335	167	164	12,259	12,241
ROSS and CROMARTY - -	518	444	12,047	11,398	31,468	32,133
ROXBURGH - -	325	131	12,383	12,786	30,373	30,350
SELKIRK - -	..	1	309	334	5,227	4,932
SHETLAND - -	..	..	2,029	2,035	7,326	7,305
STIRLING - -	1,855	1,480	3,316	3,737	19,178	18,446
SUTHERLAND - -	..	1	1,489	1,498	8,137	8,004
WIGTOWN - -	412	256	847	916	34,624	34,698

## II.—COUNTY SUMMARY.

PRELIMINARY STATEMENT of the ACREAGE under POTATOES and HAY in the  
on the 4th June 1896, with a

COUNTIES.	Potatoes.		Hay FROM CLOVER AND ROTATION GRASSES.		Hay FROM PERMANENT PASTURE.	
	1895.	1895.	1896.	1895.	1896.	1895.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
TOTAL FOR GREAT BRITAIN	563,741	541,217	2,171,966	2,303,431	4,638,722	4,760,889
ENGLAND - -	400,104	373,231	1,601,537	1,741,712	3,967,426	4,079,803
WALES - -	33,848	33,654	177,455	175,742	500,565	505,818
SCOTLAND - -	129,789	134,332	392,974	385,977	170,731	175,268
ENGLAND.						
BEDFORD - -	9,413	8,797	13,915	17,589	32,924	32,107
BERKS - -	2,247	2,176	33,612	34,625	74,057	75,075
BUCKINGHAM - -	1,849	1,732	26,027	27,119	90,339	92,184
CAMBRIDGE - -	22,352	20,253	33,525	36,366	42,403	43,349
CHESTER - -	25,432	24,298	56,047	54,699	100,048	105,552
CORNWALL - -	5,582	5,866	41,907	43,366	38,822	41,161
CUMBERLAND - -	9,117	10,009	42,119	40,577	72,566	72,053
DERBY - -	2,508	2,526	18,672	19,797	132,928	135,367
DEVON - -	11,756	12,323	70,413	76,113	117,314	121,374
DORSET - -	1,826	1,815	30,345	30,807	90,847	93,633
DURHAM - -	8,519	7,910	39,845	41,900	92,418	94,602
ESSEX - -	13,084	13,217	62,068	76,169	112,276	113,196
GLOUCESTER - -	4,477	4,338	53,388	56,026	145,225	151,772
HANTS - -	6,772	5,983	85,513	89,989	96,379	98,596
HEREFORD - -	2,066	1,855	23,906	26,823	77,686	80,513
HERTFORD - -	4,945	4,962	33,724	39,096	60,142	64,234
HUNTINGDON - -	9,647	8,552	11,088	14,362	27,927	28,940
KENT - -	16,018	14,865	36,840	42,754	109,377	114,245
LANCASTER - -	39,586	38,204	68,905	68,329	209,347	215,537
LEICESTER - -	2,432	2,231	17,417	19,206	90,021	90,630
LINCOLN - -	57,658	51,904	86,452	98,363	107,990	111,413
LONDON - -	545	577	235	218	4,356	4,679
MIDDLESEX - -	3,498	3,411	1,853	2,055	50,205	52,711
MONMOUTH - -	1,527	1,332	11,365	11,767	64,897	65,890
NORFOLK - -	8,420	6,469	127,452	142,962	67,666	68,405
NORTHAMPTON - -	3,384	3,202	22,989	26,587	80,400	81,199
NORTHUMBERLAND - -	4,555	4,351	43,204	45,152	70,189	69,942
NOTTS - -	8,011	7,413	28,013	30,490	64,909	67,372
OXFORD - -	2,357	2,603	35,030	39,117	72,575	74,333
RUTLAND - -	148	141	1,989	3,041	11,140	11,446
SALOP - -	6,936	6,412	43,911	45,898	101,453	104,289
SOMERSET - -	4,993	4,884	27,275	30,345	225,549	232,809
STAFFORD - -	11,129	9,714	32,410	34,309	120,922	127,021
SUFFOLK - -	2,988	2,773	62,080	78,399	72,432	74,574
SURREY - -	7,055	6,647	18,358	20,514	73,265	79,305
SUSSEX - -	3,559	3,314	45,148	47,103	132,256	133,205
WARWICK - -	7,064	6,437	26,879	28,220	97,372	101,589
WESTMORLAND - -	1,530	1,646	7,004	6,767	55,044	54,415
WILTS - -	2,851	2,577	59,010	60,476	139,318	141,932
WORCESTER - -	9,273	8,075	18,217	20,840	91,267	96,268
YORK, E. RIDING - -	13,767	12,698	23,109	25,195	41,665	44,567
„ N. RIDING - -	12,128	10,759	35,061	39,256	139,765	143,140
„ W. RIDING - -	26,600	23,975	45,217	48,926	269,445	275,119

## —ACREAGE.

several COUNTIES of GREAT BRITAIN, compiled from the Returns collected  
COMPARATIVE STATEMENT for 1895.

COUNTIES. (continued.)	Potatoes.		Hay FROM CLOVER AND ROTATION GRASSES.		Hay FROM PERMANENT PASTURE.	
	1896.	1895.	1896.	1895.	1896.	1895.
WALES,	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
ANGLESEY - -	2,841	2,881	15,785	17,027	19,998	17,635
BRECON - -	1,131	1,129	7,361	7,097	37,084	37,607
CARDIGAN - -	6,091	5,895	18,677	18,442	39,218	38,667
CARMARTHEN - -	3,752	3,606	17,169	16,993	77,581	77,959
CARNARVON - -	4,616	4,619	18,452	17,366	45,446	46,122
DENBIGH - -	3,408	3,438	22,372	22,095	37,364	39,067
FLINT - -	2,547	2,610	12,405	12,424	19,757	21,000
GLAMORGAN - -	1,940	1,907	15,974	15,645	71,685	72,829
MERIONETH - -	1,901	1,952	7,433	7,443	37,388	38,772
MONTGOMERY - -	2,083	2,097	16,969	16,596	46,547	47,188
PEMBROKE - -	2,630	2,623	17,653	17,547	44,167	44,452
RADNOR - -	908	897	7,205	7,067	24,330	24,520
SCOTLAND.						
ABERDEEN - -	7,365	7,245	47,053	47,765	3,116	2,624
ARGYLL - -	4,804	4,901	11,001	10,653	14,346	14,587
AYR - -	8,498	8,607	27,910	27,487	21,260	21,689
BANFF - -	1,984	1,963	10,137	9,947	1,956	1,913
BERWICK - -	2,462	2,390	9,373	8,883	3,625	4,117
BUTE - -	1,043	1,036	2,054	2,192	989	761
CAITHNESS - -	1,652	1,653	9,288	9,585	2,991	3,251
CLACKMANNAN - -	334	373	1,568	1,210	701	932
DUMBARTON - -	2,214	2,337	6,538	6,418	2,853	2,854
DUMFRIES - -	3,717	4,061	18,447	17,966	18,931	18,513
EDINBURGH - -	4,984	4,841	12,564	11,552	2,959	3,271
ELGIN, or MORAY - -	1,648	1,679	5,581	7,426	1,462	1,220
FIFE - -	14,855	15,390	25,291	24,616	8,197	8,231
FORFAR - -	12,341	12,580	20,468	18,968	2,043	2,353
HADDINGTON - -	7,952	7,809	9,648	9,462	2,313	2,337
INVERNESS - -	5,903	6,297	11,581	11,599	5,866	5,936
KINCARDINE - -	2,590	2,661	12,468	11,810	300	372
KINROSS - -	573	658	2,574	2,424	810	1,390
KIRKCUDBRIGHT - -	1,478	1,542	9,756	8,705	12,607	13,099
LANARK - -	4,075	4,464	32,921	31,813	12,057	13,029
LINLITHGOW - -	1,641	1,704	6,455	6,130	1,715	2,270
NAIRN - -	316	325	1,943	2,011	400	717
ORKNEY - -	2,845	2,890	10,634	10,188	2,013	1,970
PEEBLES - -	368	438	2,566	2,035	1,834	1,957
PERTH - -	12,560	13,717	28,622	28,093	13,252	14,863
RENFREW - -	3,107	3,220	12,514	12,204	6,950	7,986
ROSS and CROMARTY - -	7,572	7,966	13,150	13,502	3,978	3,574
ROXBURGH - -	1,373	1,442	9,380	8,497	7,758	5,925
SELKIRK - -	229	205	895	1,096	1,527	1,465
SHETLAND - -	3,158	3,179	687	691	1,658	1,586
STIRLING - -	3,004	3,602	12,074	12,320	4,540	4,616
SUTHERLAND - -	1,639	1,673	3,634	4,089	1,601	1,783
WIGTOWN - -	1,506	1,484	4,199	4,640	4,123	4,177



## II.—COUNTY SUMMARY.

PRELIMINARY STATEMENT of the NUMBER of CATTLE, SHEEP, and PIGS collected on the 4th June 1896, with

COUNTIES.	Cattle.		Sheep.		Pigs.	
	1896.	1895.	1896.	1895.	1896.	1895.
TOTAL FOR GREAT BRITAIN }	No.	No.	No.	No.	No.	No.
	6,493,582	6,354,336	26,705,329	25,792,195	2,878,801	2,884,431
ENGLAND - -	4,573,603	4,472,565	16,031,095	15,557,571	2,476,488	2,471,020
WALES - -	712,979	703,824	3,207,815	3,000,841	257,698	260,091
SCOTLAND - -	1,207,000	1,177,947	7,466,419	7,233,783	144,615	153,320
ENGLAND.						
BEDFORD - -	30,398	30,023	94,966	96,278	31,658	32,826
BERKS - -	40,602	39,154	182,240	184,668	34,484	33,197
BUCKINGHAM - -	68,077	66,153	197,409	192,609	40,155	40,047
CAMBRIDGE - -	49,645	48,137	209,305	213,482	58,555	56,191
CHESTER - -	174,586	170,136	103,434	92,456	75,034	78,392
CORNWALL - -	199,825	193,900	427,666	421,443	102,381	100,074
CUMBERLAND - -	140,517	141,937	550,404	518,276	23,901	23,708
DERBY - -	137,357	136,111	183,241	176,998	38,923	40,919
DEVON - -	268,089	263,506	906,401	874,408	120,928	123,937
DORSET - -	86,433	83,071	378,221	370,947	66,288	66,211
DURHAM - -	74,105	71,968	242,761	225,041	13,801	12,894
ESSEX - -	83,609	79,632	292,090	282,586	113,250	107,811
GLOUCESTER - -	115,669	109,786	360,200	347,011	83,993	83,619
HANTS - -	80,471	76,402	390,115	366,004	88,097	82,434
HEREFORD - -	90,190	88,632	320,819	318,593	31,409	33,626
HERTFORD - -	32,013	30,068	119,987	121,480	34,329	33,689
HUNTINGDON - -	28,417	27,986	99,771	101,110	22,650	21,728
KENT - -	70,035	67,909	903,709	903,642	69,706	68,888
LANCASTER - -	231,729	226,234	328,423	306,954	61,870	60,421
LEICESTER - -	129,888	131,724	317,350	304,589	33,291	31,321
LINCOLN - -	237,592	233,382	1,176,653	1,161,958	117,646	114,278
LONDON - -	6,323	6,254	4,471	4,044	3,475	3,465
MIDDLESEX - -	16,528	15,751	22,603	21,473	15,058	15,548
MONMOUTH - -	46,050	45,542	212,974	201,274	19,010	18,877
NORFOLK - -	125,106	125,188	526,520	520,726	117,903	119,362
NORTHAMPTON - -	117,377	119,702	411,923	409,043	38,150	39,376
NORTHUMBERLAND - -	110,766	108,022	1,045,794	1,000,038	12,687	13,377
NOTTS - -	80,364	81,152	226,088	221,642	35,155	33,649
OXFORD - -	55,203	53,434	244,578	241,742	43,625	44,737
RUTLAND - -	17,392	17,512	82,877	82,809	3,031	3,234
SALOP - -	170,033	164,928	474,591	457,987	74,787	81,560
SOMERSET - -	225,914	221,177	544,698	538,757	137,154	140,853
STAFFORD - -	154,527	152,896	255,576	246,905	62,866	61,720
SUFFOLK - -	68,585	66,502	400,732	387,590	165,636	167,521
SURREY - -	43,677	41,282	81,143	78,605	28,333	27,229
SUSSEX - -	107,065	103,883	447,015	446,416	48,917	48,043
WARWICK - -	98,295	95,305	287,980	272,856	48,782	46,498
WESTMORLAND - -	65,771	64,107	370,725	359,978	5,057	4,755
WILTS - -	108,563	106,072	547,617	534,389	79,830	79,195
WORCESTER - -	62,378	60,319	172,569	164,909	50,589	51,007
YORK, E. RIDING - -	85,973	83,136	468,552	436,237	62,551	63,080
" N. RIDING - -	170,799	164,254	710,795	676,762	59,735	58,667
" W. RIDING - -	267,667	260,296	704,109	672,856	101,808	103,351

## —LIVE STOCK.

in the several COUNTIES of GREAT BRITAIN, compiled from the Returns  
a COMPARATIVE STATEMENT for 1895.

COUNTIES. (continued.)	Cattle.		Sheep.		Pigs.	
	1896.	1895.	1896.	1895.	1896.	1895.
<b>WALES.</b>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
ANGLESEY - -	50,590	49,249	64,870	59,315	18,169	18,560
BRECON - -	39,818	40,014	479,002	456,069	9,914	9,813
CARDIGAN - -	66,000	65,336	246,327	221,533	24,763	24,308
CARMARTHEN - -	117,723	115,564	254,817	234,606	39,390	39,644
CARNARVON - -	54,572	54,320	256,313	235,707	22,905	24,080
DENBIGH - -	67,142	65,401	313,405	296,794	30,321	30,458
FLINT - -	35,528	33,609	77,075	68,744	19,830	19,664
GLAMORGAN - -	52,628	52,203	308,475	292,786	19,295	18,892
MERIONETH - -	37,785	38,002	405,791	376,853	9,564	9,561
MONTGOMERY - -	70,386	69,950	393,946	367,856	25,580	27,141
PEMBROKE - -	89,014	87,543	130,577	119,817	32,429	32,278
RADNOR - -	31,793	32,633	277,217	270,761	5,538	5,692
<b>SCOTLAND.</b>						
ABERDEEN - -	178,791	173,961	190,431	183,951	11,461	10,379
ARGYLL - -	61,147	60,005	1,050,969	1,026,712	4,380	4,905
AYR - -	100,286	98,842	373,274	361,057	14,776	16,768
BANFF - -	43,790	41,764	63,809	62,703	2,986	2,461
BERWICK - -	16,018	15,936	312,863	307,365	4,318	4,530
BUTE - -	9,775	9,539	49,643	49,219	935	887
CAITHNESS - -	22,488	21,646	116,748	108,621	1,790	1,806
CLACKMANNAN - -	4,056	4,042	14,887	12,962	2,744	2,985
DUMBARTON - -	15,251	14,676	78,644	75,032	1,605	1,837
DUMFRIES - -	58,357	58,067	544,253	525,301	10,636	11,531
EDINBURGH - -	20,782	19,451	189,261	183,322	7,291	8,133
ELGIN, or MORAY - -	22,797	21,489	64,614	61,802	2,921	2,771
FIFE - -	49,632	47,912	105,918	94,578	5,955	6,532
FORFAR - -	53,245	49,163	157,010	146,329	7,272	7,951
HADDINGTON - -	9,190	9,506	124,369	127,483	2,068	2,138
INVERNESS - -	52,814	51,799	661,099	645,900	2,763	3,019
KINCARDINE - -	27,052	26,133	39,952	37,535	2,624	2,680
KINROSS - -	6,561	6,948	38,650	36,239	499	515
KIRKCUDBRIGHT - -	46,472	48,213	394,422	382,115	7,284	7,892
LANARK - -	71,703	71,367	240,771	232,673	7,540	8,560
LINLITHGOW - -	11,982	11,918	27,735	25,173	1,767	2,085
NAIRN - -	6,297	6,199	19,666	18,335	683	681
ORKNEY - -	28,397	26,882	35,228	32,050	3,845	3,580
PEEBLES - -	7,023	6,789	190,861	186,221	705	807
PERTH - -	78,003	74,861	730,950	707,661	8,228	8,886
RENFREW - -	26,205	26,125	41,197	38,730	1,591	1,584
ROSS and CROMARTY - -	44,932	41,922	326,754	320,969	5,360	5,201
ROXBURGH - -	16,929	17,327	522,906	510,227	3,730	3,938
SELKIRK - -	3,069	3,418	185,800	181,031	443	509
SHETLAND - -	19,069	18,883	105,327	102,098	2,918	2,901
STIRLING - -	33,354	32,889	131,609	128,734	2,479	2,677
SUTHERLAND - -	12,500	12,002	210,742	203,681	1,049	955
WIGTOWN - -	49,033	48,323	126,057	117,974	9,967	11,236

## CULTIVATION OF CEREALS IN ARGENTINA.

In an earlier number of this Journal\* some information was published relating to the economic conditions of the wheat-growing industry of Argentina and reference was made to certain statements as to the extent of land suitable for the growth of cereals in that country. Most of these statements have been based on the results of an inquiry made on behalf of the Argentine Government by M. Fliess, who estimated the area available for the production of wheat and other grains, without the aid of artificial irrigation, at 240 million acres, lying between 28° and 40° south latitude and limited on the west by 65° or 66° west longitude. This estimate has been regarded by several authorities as an exaggerated one, although it has been generally agreed that the extent of land available for arable cultivation is very considerable.

An interesting report on this subject has been prepared by the agricultural expert attached to the German legation at Buenos Ayres. From the results of the investigations made by this gentleman it would appear that the cultivation of cereals in Argentina could not be pursued without the aid of artificial irrigation beyond 64° west longitude owing to the deficient rainfall. This limitation would reduce Fliess's estimate by about 40 million acres, and if a further deduction is made of the extent of land necessary to produce the fodder for draught animals, which has been reckoned at equivalent to about one fourth of the entire surface, the area remaining for the production of grain crops would be about 150 million acres. It would seem, therefore, that the physical characteristics of Argentina, if Fliess's northern and southern limits are accepted as correct, would under favourable economic conditions render it possible to extend by twentyfold the existing area under wheat in that country.

In the report referred to, it is stated that one of the greatest advantages enjoyed by the Argentine wheat grower over his competitor in Europe lies in the favourable climate, which enables him to carry on his operations uninterruptedly throughout the winter and summer, and to produce two crops in the year, one of maize and the other of wheat or flax, from the same land. In the provinces of Santa Fé and Cordoba the period for sowing wheat lasts from the middle of May to the middle of August, and in Buenos Ayres it continues for nearly three months. This not only makes it possible for the farmer to work a larger surface without increasing the number of his hands, by extending the work over a longer period, but also to protect himself to some extent against loss from drought, for while in a very dry year he may run the risk of losing that

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\* Vol I., No. 2, Dec. 1894, p. 165.



portion of his crops sown late, he can as a rule reckon with certainty on a good harvest from the earlier sown seed, which will have received sufficient moisture in the autumn.

Owing also to the mildness of the climate, cattle can be kept in the open air all the year round, and the farmer is thus spared the outlay required in Europe for the erection of stalls. Sheds are sometimes erected for imported pedigree animals and now and again for milch cows, but never for ordinary draught animals, whether horses, mules, or oxen. Only the province of Santa Fé, however, enjoys this advantage to the fullest extent, since in Cordoba, at all events in the parts lying about the 64th degree of west longitude, the fodder becomes somewhat scanty in years of long-continued drought. But by far the greater number of Argentine farmers are said to be in the fortunate position of having to take practically no trouble with their stock, beyond paying the rent for the pasture.

Even more favourable than the climate for field cultivation is the soil of Santa Fé and Cordoba. The whole region is alluvial land, formed by the disintegrated fragments washed away from the granite mountains which range, under the name of Sierra de Cordoba, along the west of that province from north to south. In a treatise by Dr. A. Döring there are three analyses of soils of this district, which exhibit a remarkable richness in potash and phosphoric acid. It is this richness of the "pampas" soil in mineral plant foods which enables the farmer year after year to cultivate wheat on the same field without the application of manure, and to this is to be attributed the fact that, on the oldest farms, the fields, in spite of 40 years uninterrupted wheat cultivation, still show the same capacity of production as at the commencement of their cultivation. This soil is stated to be everywhere sufficiently deep for growing wheat; it is rarely less than 12 inches, but often 30 inches and more; it is also remarkably free from large stones, a further and not unimportant advantage, which has particularly facilitated the extended use of agricultural machinery.

Of greater importance, however, is the generally level nature of the surface, which renders work with implements and machines as light as possible, and allows the easy transport of these as well as of the produce of the harvest.

The subsoil in the wheat region is said to retain water at a depth below the surface which renders digging for springs in most cases an easy matter. Cordoba seems in this respect even more favoured than Santa Fé; since in the former province water is generally at a depth of from 20 feet to 26 feet—often, however, 10 to 13 feet; while in Santa Fé, according to official information, it is found at 23 feet to 56 feet below the surface.

As regards the preliminary expenses of cultivation, the cost of breaking up the land is insignificant, as the pampas is covered with low grasses—at the most 39 inches high—so that ploughing can be started on the very first day, and no roads have to be built. The rapidity with which agriculture has

extended in Argentina would not have been possible if the land, in place of grass, had been covered with trees or even bush. The absence of timber for building or fuel is of no consequence. The material for constructing the first hut is obtained from the soil, whether in the form of turf or of mud, which is either burnt or dried to bricks. The long, tough grass of the pampas serves as a roof, which makes a warm house in winter and a cool one in summer. For heating there are either the woody stems of a large umbellifer (*bisnaga*), or, where this bush does not grow, the dried dung of the domestic animals, which forms a fuel of excellent heating properties.

The separation of the grasses into *pasto tierno*, or pasture with tender soft grasses, and *pasto fuerte*, or hard grasses, is of importance in Argentine agriculture. The first is much more nourishing and easily digestible, the other endures frost and drought better. While horses and cattle thrive on both kinds, the hard grasses are completely unsuitable for sheep. By long feeding with cattle, however, the hard sorts gradually disappear, and give place to the softer grasses and clover which are relished by sheep. Agriculture has attained its greatest development almost exclusively where the *pasto fuerte* forms the natural vegetation; that is, in Santa Fé, Cordoba, Entre Rios, and the west and south of Buenos Ayres (province), whereas in the east of the latter province, where the grass is *pasto tierno*, there is practically no wheat cultivation, notwithstanding the favourable position of the region for home and foreign markets, and in spite of its fertile soil.

This feature appears to be due to two reasons, one technical and the other economic. Lands with *pasto fuerte* are by climate and soil clearly better adapted to wheat than those with *pasto tierno*, the climate of which is apparently too damp and the soil too luxuriant, and apt to favour too much the formation of straw to the detriment of the grain. An economic cause is to be found in the fact that the sheep-breeding pursued on *pasto tierno* yields a very much better profit to the *estanciero* than the cattle and horse-breeding of the *pasto fuerte*, and that hence the necessity of letting plots of their land to wheat-growing colonists in order to make it more valuable was not so great with sheep-breeders.

Among the disadvantages with which the wheat-grower in Argentina has to cope are locusts, drought, hail, and rain, but these have not, hitherto, seriously affected the competition of that country in the world's wheat market. Rust is not regarded with apprehension in Argentina, because it rarely appears, and when it does it attacks hardly anything beyond the leaves, and those only at a stage of growth when the ripening of the grain no longer requires their co-operation.

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## REPORTS ON FOREIGN CROPS.

## CROPS IN THE UNITED STATES.

The latest reports of the Statistician of the Department of Agriculture of the United States furnish the following particulars as to the condition of crops in that country. The preliminary returns of the acreage under wheat indicated an area under this crop equivalent to 101·7 per cent. of the acreage harvested in 1895, or 34,619,000 acres this year as compared with 34,047,000 acres, an increase of about 570,000 acres. The average condition of spring wheat on August 1st was 78·9. The August average is 17·0 per cent. below the same period of last year, when it was 95·9, while in 1894 it was 67·1.

The acreage planted with maize is returned as 98·7 per cent. of the area similarly planted last year, which was 82,000,000 acres, this being a decrease of a little over 1,000,000 acres, and making the area planted this season 81,000,000 acres. On August 1st the average condition of the crop was reported to be 96.

The average condition of oats in August was 77·3. Last year the condition of the crop at the same date was 84·5. The preliminary returns indicated the acreage of oats to be 98·8 of last year's area, or 27,543,000 acres as compared with 27,878,000 acres in 1895.

On August 1st the average condition of barley stood at 82·9, a decline of 5·2 points since the previous month. The barley acreage was returned in June at 89·9 per cent. of the area under the crop in 1895, or 2,967,000 acres as compared with 3,300,000 acres last year.

The average condition of potatoes on August 1st was 94·8, a decline of 4·2 points from the previous month. In August 1895 the condition of potatoes stood at 87·7, and in the same month of 1894 at 74.

As regards cotton, the general average condition of the crop on August 1st was 80·1. With the exception of last year, when the average condition in this month was 77·9, this is the worst August average condition for the past 15 years, even that of 1893 being slightly higher at 80·4. It is stated that the heavy rains in July damaged the crop, especially in Virginia, North and South Carolina, Florida, and some portions of Georgia.

The crop over almost the entire cotton belt is maturing rapidly and is earlier than for many years, partly from premature ripening and partly from early planting. The area planted with cotton amounted to 23,460,000 acres compared with 20,191,000 acres last year.

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## CROPS IN INDIA.

The final general Memorandum on the wheat crop of the season 1895-96, which was issued at Simla on the 9th June last, stated that the situation remained substantially unaltered from that described in the second Memorandum on the wheat crop issued three months before. As a consequence of the premature cessation of the autumn monsoon of 1895, the area placed under wheat was, in most of the wheat-growing regions, seriously restricted; and as a consequence of the almost complete failure of the winter rains of 1895-96 the yield on this restricted area was also in every case much below the average. In the North-Western Provinces and Oudh the poor harvest followed on an even poorer harvest in the preceding year, and the same remark applies to the Nizam's territory; in the Central Provinces also the poor harvest followed a deficient harvest last year. In all other places the yield was greatly below that of the preceding year as well as below the average yield. In the Panjab, where the harvest represents from 35 to 40 per cent. of the whole of the Indian wheat harvest, the deficient outturn of this season followed on two successive harvests of remarkable abundance.

The total area and yield of the season compare as follows with those of the preceding year and the average :—

Years.	Area in Acres.	Yield in Tons.
Season of 1894-95 - - -	27,207,288	6,827,277
„ „ 1895-96 - - -	22,731,504	5,499,927

The following table gives the acreage and yield of each province during the last two seasons. The figures for Central India include the supplementary estimates for the Bhopal Agency, Indore and Bundelkhand, which were not incorporated in the final general memorandum :—

Province.	1895-96.	1894-95.	1895-96.	1894-95.
	Acres.	Acres.	Tons.	Tons.
Panjab - - -	6,893,400	8,051,800	1,715,873	2,395,353
N. W. Provinces and Oudh - -	3,696,576	4,627,816	1,236,486	1,141,297
Central Provinces - -	2,573,170	3,393,348	431,689	502,275
Bombay - - -	2,206,134	2,678,665	439,584	744,961
Sind - - -	319,900	673,251	71,949	215,361
Berar - - -	747,025	889,326	48,129	81,882
Bengal - - -	1,427,400	1,413,000	345,800	486,300
Rajputana - - -	1,306,868	1,529,146	315,573	368,168
Central India - - -	1,993,877	2,418,957	816,399	817,342
Hyderabad - - -	1,561,698	1,527,445	78,082	74,034
Mysore - - -	5,456	4,534	363	304
Total - - -	22,731,504	27,207,288	5,499,927	6,827,277

The Memorandum states that with the contracted area in every Province where wheat is an important crop, prices have been moving upwards for some months past as the rain held off and prospects became more uncertain. With the inferior results of the harvest ascertained, prices had reached a high level everywhere. With reduced surplus stocks in India, and such a range of prices, there was but little present prospect of any considerable export trade having regard to the demand for Indian consumption and the absence of any special demand from Europe where prices of wheat still ruled low though higher than they were last year.

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#### CROPS IN RUSSIA.

The latest reports received by the Board regarding the condition of the crops in Russia relate to the middle of August, when the winter wheat harvest was nearly finished. The crop is reported to have suffered from excessive rains in the black-soil region and in the Volga basin, and although it had improved in the coast regions of the Black Sea and Sea of Azov, it still left much to be desired. An average crop was expected in the Caucasus and in the Baltic provinces. The reports point generally to an indifferent harvest of winter wheat.

As regards spring wheat, there had been an improvement in the central parts of the black-soil zone, as well as in the South and South-west Provinces. The crop was less satisfactory in the Dnieper and Boug districts, whereas more favourable reports had been received from the Crimea. Other parts of the Empire appeared to promise a medium crop. The grain is reported to be of inferior quality.

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#### CROPS IN AUSTRIA.

Quoting from the official reports for the middle of July; issued by the Austrian Ministry of Agriculture, the *Wiener Landwirtschaftliche Zeitung* states that in Austria the rye harvest had been completed in the southern districts, while in Provinces it was in full swing. An average crop was expected with a good yield of straw.

The wheat harvest was over in many districts, and the yield promised to be more abundant than that of rye, but inferior in quality. The crop was much laid in some localities, and there were frequent complaints of rust; though this was, as a rule, confined to the stems.

Winter barley had been harvested for the most part in good condition, but summer barley and oats were not so satisfactory. Only an average yield of these crops was expected.

Maize was backward, but it promised to yield an abundant crop. Peas and beans were, as a rule, a very satisfactory crop.

Potatoes, on the other hand, were very unequal in condition, the reports pointing on the whole to an indifferent yield. Sugar-beet had improved and promised to be a good average crop. Roots were generally satisfactory.

The hay crop had turned out to be more abundant than had been anticipated, and slightly exceeded the average. Clover and grasses under rotation varied in different districts, and no general estimate could be given of their condition.

In most of the vine districts the vines promised well, particularly in Carinthia and the greater part of Styria. The outlook for the fruit crop was unsatisfactory except in a few districts.

### CROPS IN DENMARK.

According to the reports published in the *Berlingske Tidende* and the *Ugeskrift for Landmænd* in July and August, the wheat and rye crops in Denmark were expected to turn out well, both as regards quantity and quality. Much of the grain had been cut and harvested. Barley promised to be a fair crop, but cutting had scarcely begun by the beginning of August, and oats were even more backward. Potatoes required rain to develop the tubers.

As regards turnips, swedes, and mangolds, the outlook was not encouraging. Rain was much needed in many districts, and it was feared that the yield would be, in any case, short of the average. Grass on permanent pastures and meadows was also reported to be generally poor and scanty.

The *Ugeskrift for Landmænd* states that the yield of the crops in Denmark in the year 1895 gave the following total results:—

Crop.	Total Yield.	Crop.	Total Yield.
	Bushels.		Bushels.
Wheat - - -	4,408,000	Peas and beans - -	798,000
Rye - - -	17,160,000	Potatoes - -	19,608,000
Barley - - -	22,306,000	Roots - -	79,192,000
Oats - - -	37,886,000		Cwts.
Buckwheat - -	760,000	Sugar-beet - -	8,328,600

In the annual report of Captain Boyle, Her Majesty's Consul at Copenhagen, the gross value of the harvest in 1895 for the whole country was calculated to be about 15,750,000*l.*, of which 8,100,000*l.* is for the islands, and 7,650,000*l.* for Jutland. The value in 1895 compared with 1894 shows an increase of about 1,150,000*l.*, but is 1,050,000*l.* less than the average for the last five years. The increase in value in 1895 compared with 1894 is due to the fact that all the different crops with the exception of buckwheat, gave a larger yield than in 1894, though the prices, with a few exceptions, were lower.



The richness and cheapness of all fodder enabled farmers to keep their live stock in good condition during the winter of 1895. The quantity of grass was large during the spring and summer months, so that when the autumn came cattle and dairying cows went into their winter quarters in capital condition, especially now that it has become the rule to give stock a little extra cake and corn to help them on—strong food as it is termed by Danish farmers. The consumption of this food in 1895 was very large, in fact, larger than in any previous year. At the commencement of last winter attempts were made to diminish the use of oil cake, and to replace it by corn and grain, but it was found that a satisfactory yield of milk could not be kept up without the use of oil-cake, which contains a large quantity of albumen. The use of maize for strong food has greatly decreased, as it has been found to be too expensive, and it has been replaced by Russian barley and rye.

In Jutland the change from fattening to dairying is still proceeding, and greater care is being taken to breed from the best sorts, and to weed out all cows that are not first-rate milkers.

#### CROPS IN FRANCE.

The French Ministry of Agriculture issued, at the end of July last, a report respecting the condition of the crops on the 15th of that month.

This periodical report is tabulated from the observations made and supplied by the departmental professors of agriculture, and the following numerical scale is adopted to indicate briefly the state of the crops:—100 implies “very good”; 80, “good”; 60, “rather good”; 50, “passable”; 30, “indifferent”; 20, “bad.” According to this method, the state of the crops was reported to be as shown in the following table:—

Crop.	No. of Departments represented by					
	100.	99 to 80.	79 to 60.	59 to 50.	49 to 30.	29 to 20.
Winter wheat	4	59	17	1	1	1
Spring wheat	—	20	19	9	—	—
Rye	11	52	15	2	1	—
Oats	2	33	30	8	3	1
Barley	2	25	31	8	2	1
Green crops	1	29	31	11	7	1
Clovers	3	24	34	12	10	1
Pastures	2	15	43	12	9	—
Potatoes	9	46	25	5	1	—

Spring wheat and oats were not grown in 36 and seven departments respectively. In a few cases, which are not included in the above table, the crops had been harvested at the date of the enquiry.

## CROPS IN GERMANY.

According to the reports issued by the Imperial Statistical Bureau at Berlin, relating to the condition of crops in Germany in the middle of August. Wheat was above the average, and the harvest was partly over. The quality had suffered from the unfavourable weather of July, and there were complaints of the crop having been injured by rust and mice.

The rye harvest was almost everywhere completed. The crop had been prejudicially affected by rain and wind, particularly in the east, and the results were not so satisfactory as had been expected. The quantity was, however, above the average, and the straw was generally long.

The condition of oats was stated to be on the whole good, but the straw was short in many districts, and in Wurtemberg the condition of the crop generally left much to be desired.

The yield of barley had not come up to expectations; only a portion of the crop had been well harvested.

Potatoes were reported to be in moderately good condition. In Prussia the crop was strong in haulm, but rain was needed to develop the tubers. From Hesse, Baden, Alsace Lorraine, and Wurtemberg, favourable accounts were received of the condition of the crop.

The condition of all the crops in the middle of July was statistically estimated by the Imperial Statistical Office as follows (where 1 represents the expectation of a very good harvest, 2 good, 3 average, 4 poor, 5 very bad):—

Winter wheat, 2·4; spring wheat, 2·6; winter rye, 2·5; spring rye, 2·8; barley, 2·8; oats, 2·7; potatoes, 2·6; clover and lucerne, 2·8; meadow hay, 2·5.

## CROPS IN HUNGARY.

According to the *Wiener Landwirthschaftliche Zeitung* of 12th August last, quoting from the reports of the Hungarian Ministry of Agriculture, the damage caused by storms and hail to the crops in Hungary has been considerable during July. A yield of 141,883,000 bushels of wheat was expected from an area of 7,590,000 acres, or about 18·7 bushels per acre. In 1895 the yield of wheat was 143,990,000 bushels. 2,861,000 acres under rye were expected to yield 48,247,000 bushels (against 40,073,000 bushels in 1895) or 16·81 bushels per acre. Although the average yield of rye is rather below that of wheat, the quality is expected to be excellent. 2,566,000 acres were under barley, and the probable yield of 20·79 bushels per acre would give a total of 53,370,000 bushels against 47,988,000 bushels in 1895; the quality, which was expected to be very

good, has deteriorated. Oats are expected to give 26 bushels per acre, which on a cultivated area of 2,472,000 acres represents a total harvest of 64,380,000 bushels (1895, 57,910,000 bushels). Both quality and quantity of oats promise very well. Rape was mostly already harvested (1st July), but was not generally satisfactory. The areas in the above statements have been corrected to allow of deductions caused by damage from weather.

#### CROPS IN ITALY.

According to the official reports of the Italian Ministry of Agriculture published in the *Gazetta Ufficiale* of July 20th, the cereal harvest in Italy was everywhere satisfactory. Wheat and maize proved to be abundant crops of good quality and green crops had turned out equally well.

Vines had been attacked by *Peronospora* in a few districts, but they were in good condition generally and promised to yield well. Olives also were expected to furnish a good crop.

#### CROPS IN MANITOBA.

The Department of Agriculture at Winnipeg has published the following statement showing the extent of the cultivated area in Manitoba during the last three years:—

Crop.	1894.	1895.	1896.
	Acres.	Acres.	Acres.
Wheat - - - -	1,010,186	1,140,276	1,081,960
Oats - - - -	413,686	482,658	442,445
Barley - - - -	119,528	153,839	127,885
Flax - - - -	30,500	82,668	20,325
Potatoes - - -	13,300	16,716	12,260
Roots - - - -	7,880	6,685	6,715

The total area under all kinds of crops in 1896 is 1,696,583 acres, while that of last year was 1,887,796, showing a decrease of 191,213 acres. It is stated that not since 1883, when crop bulletins were first issued by the Department, has there been such a wet season for seeding as in 1896. In the bulletin issued on August 26th last, the yield of wheat in Manitoba this season is estimated at 18,565,198 bushels, or about 10,000,000 bushels less than that of last year. Reports from all parts of the province were to the effect that prospects could not be better for pastures and hay.



## CROPS IN ROUMANIA.

The Board have received from the Foreign Office a despatch sent by Mr. A. Percy Bennett, Her Majesty's Acting Consul-General at Galatz, which states that at the end of July last harvesting operations in Roumania were being actively carried on, and that from all parts of the country reports were coming to hand of the exceptional excellence of this year's crops both as to quality and quantity.

Wheat and barley gave promise of a harvest incomparably superior to that of the last three years, and it is probable that the maize crop will be one of the best Roumania has ever known. The weather generally being favourable for cutting and threshing the grain, the export of the new crops was expected to begin in the course of a few weeks.

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## INJURIOUS INSECTS AND FUNGI.

THE CHERRY MOTH (*Argyresthia nitidella*).

In the beginning of May it is often noticed that the small cherries look unhealthy just after the fruit has "set," and that later on many fall off. If these fallen cherries are closely examined, in many cases a hole will be found evidently caused by some insect. In the spring of this year so many complaints were received of the unhealthy state of cherry trees that investigation was made, and it was seen that there was a very small maggot, or larva, in a large per-centage of the fruitlets, which were about the size of a small grain of wheat, and still had on the floral envelopes, or "caps."

The crop was very greatly reduced in consequence of this attack, the effects of which are very frequently attributed to weather influences, or to the failure of the blossoms to "set" properly, from some unexplained cause or other. The intensity of the attack was shown by the shortness of the crop, and the cause was indicated by the quantities of moths seen flying round the cherry trees in the latter part of June and the beginning of July.

*Life History.*

The moth belongs to the *Argyresthidae*, the ninth family of the *Tineina*, according to Mr. Stainton's classification. It is  $5\frac{1}{2}$  lines across the wings. The fore-wings are light brown with white or cream-coloured inner margins. In the middle there is a fascia of a deeper brown colour which terminates in the tip of the wings. This is typical of *Argyresthia nitidella*, as Stainton shows. *Argyresthia ephippella*, which is remarkably like *A. nitidella*, has a dark brown fascia also, but this terminates at the costa. However, *A. ephippella* is supposed to feed on the cherry and *A. nitidella* upon the hawthorn, and it is curious to find that in this case the habit appears to have been reversed. When at rest, the position of the moth is such that it seems almost to be resting upon its head. The moth places its eggs on the shoots of the cherry trees, near the flower buds, where they remain during the winter, and the caterpillars come from the eggs and crawl to the flowers just as the fruit is forming.

The caterpillar has 16 feet, and the three first pairs of claw feet are brown. The head is brown; the body is lightish green, becoming greyish later on, and the first segment is light brown. The caterpillar gets into the tiny cherry, in which it is curled up

in a curious manner, scoops out the inside, and remains, apparently from 15 to 17 days in larval condition. Then it spins up in the cherry and in its withered inflorescence in a densely thick white cocoon, from which in about 15 days the beautiful little moth comes forth.

The only way of preventing or lessening this attack would be to allow birds to remain unmolested in the cherry orchards during June and July. This is obviously impracticable. During these months the birds are scared from the orchards from early morning till evening by the perpetual popping of guns, or they would soon clear off the cherries. Swallows, which would clear off these moths as they fly in swarms, are becoming lamentably scarce throughout the country.

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#### TOMATO DISEASE (*Cladosporium lycopersici*).

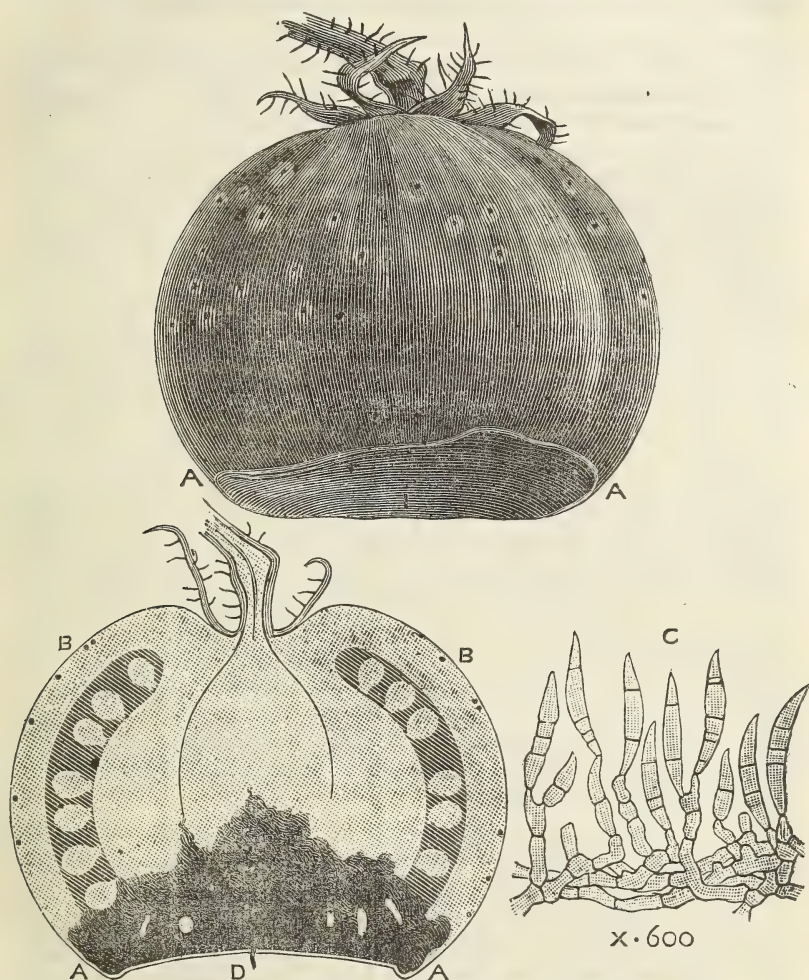
This disease has for some years past caused considerable injury to tomatoes grown in houses and out of doors. It attacks the young tomatoes at their styles, or stigmata—the points which are seen at the lower ends of the fruits—for some time after their formation, and rapidly spreads through the fruits, causing decay and premature ripening, so that they are quite unfit for use.

This “rot” must not be confounded with the other tomato affection known as “black rot” due to another fungus termed *Macrosporium tomato*, Cooke. This attacks tomatoes in a different manner, and is not confined to the lower part, or style end of the fruit. The colour of the rot is black, or very dark green, and altogether much darker than the decay consequent on the attack of *Cladosporium lycopersici*. The tomato plants in all other respects appear perfectly healthy and vigorous, and it is only when the fruits are about the size of a horse chestnut that the unmistakable brown spot round the style is apparent.

It is frequently said that this disorder is caused by scorching from the sun, but this is impossible, as the sun does not shine directly upon the lower or style end of the fruit. It has been conjectured also that the disease arises from unhealthy fructification, producing decay, which rapidly extends around the style as it dries up. If the brown and decaying portion of the fruit is closely examined with a microscope, it will be plainly seen that the mycelium of a fungus is interwoven among its tissues. When observed in tufts, or masses, the fungus is olive-brown, but when in a single series it appears to be almost colourless. The spores are cylindrical, slightly pointed, and 1 to 6 septate, or even more.



The fungus is most easily found upon the narrow brown line dividing the decaying from the sounder part of the fruit, which is generally red, or yellowish red, indicating premature ripening.



Whole tomato, infected. AA, Lower part invaded by fungus. Section of tomato:—AA, showing decay caused by fungus, and shrivelled seeds; D, the style, the point of attack; BB, Points of unsuccessful attack of the fungus; C, Fungus,  $\times 600$ .

Its action causes decay and rottenness, which extend in some cases nearly to the centre of the fruit in the form of a black mass in which are easily traced the mycelia of saprophytic fungi. The seeds are usually shrivelled, as shown at the lower end of the tomato in the above illustration, prepared by Mr. Worthington G. Smith. It is supposed that the *Cladosporium* first gains an entrance into the tomato by means of the decaying style, which persists for a considerable time after the fruit has formed. From the blotches with tiny dark centres upon the tomato in the

upper part of the figure, and the corresponding black dots on the section of the tomato, it would appear that the fungus is only able to penetrate the skin at the style, and before the epidermis at that point has become completely closed.

Dr. Plowright was the first to call attention to, and to name, the fungus which causes this disorder. He described it in 1881 as injuring tomatoes together with other fungi. But Dr. Plowright considered the *Cladosporium* to be the conidium stage of a *Phoma*, and discovered another stage in the shape of the macroconidia of *Macrosporium lycopersici* (*M. tomato*, Rav. ?). These peculiarly-shaped *macroconidia*, with club-shaped ends, as described by Dr. Plowright, were not noticed in tomatoes recently examined; it is, however, worthy of remark that the disorder of tomatoes known in America as "black rot" is ascribed to *Macrosporium tomato*, Cooke, and the spores and tufts of conidiospores as figured in the report of the section of Vegetable Pathology of the United States Department of Agriculture for 1888 exactly resemble those illustrating Dr. Plowright's description of *Macrosporium tomato*.

Another fungus has been noticed in tomatoes infected with *Cladosporium lycopersici*, having a somewhat dense mycelium of threads more delicate and slender than those of the *Cladosporium* mycelium and quite colourless. This permeated the tissues of the fruit and lived upon it, penetrating further into the healthy tissues of the fruit than the *Cladosporium*, though the *Cladosporium* was evidently the originator and main cause of the mischief. It is by no means clear what is the species of the other fungus, but it is probably a *Fusarium* similar in habit to the *Fusarium* described in the American report alluded to above, which was found with the *Macrosporium tomato*, and said to be *Fusarium solani*.

From the information that has been obtained with regard to this disease it seems to be principally confined to tomatoes grown in houses. It has been seen upon those produced out of doors, but not nearly in such a serious degree, and this is because the spores of the fungus are more readily communicated in the comparatively close quarters of a tomato house than in the open air. The variations in temperature in tomato houses are also often greater and more sudden than in the open air, unless the greatest care is observed. In some cases, too, insufficient attention is given to ventilation, and to the constant changing of the air—to have, in short, a continuous circulation of air. In some span-roof houses the sun shines on the glass fiercely in the day time, and there is a great and rapid fall of temperature in the evening and night. Too much moisture in the atmosphere of the houses, especially when the temperature is very high, will also cause an unhealthy condition predisposing the plants to fungoid attacks; watering and syringing should therefore be done judiciously.



When tomatoes are seen to be spotted at the style by this fungus they should be removed at once from the plants and destroyed or buried.

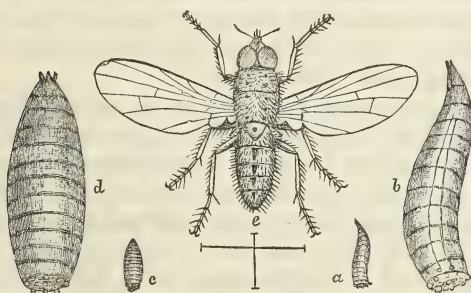
It has been remarked that tomato plants manured heavily with horse, pig, and cattle manure, not well composted, are especially liable to this disease. Also that some varieties are more free from it than others, notably those of a pointed shape, but there is hardly sufficient evidence at present on this head to warrant any decided conclusions.

Spraying with sulphate of copper has been proved useful in this disorder, the dressing being in the form of a Bordeaux mixture made of 5 to 6 lbs. of sulphate of copper and 6 to 8 lbs. of lime to 100 gallons of water, sprayed over the plants gently and evenly, not washed on with a common syringe. Or a simple solution of from  $\frac{1}{2}$  to  $\frac{3}{4}$  of a pound of sulphate of copper to 500 gallons of water has been found effectual in America in the case of a similar affection. This was put on twice in a few days with a nozzle which distributed a very fine spray, so that every part of the plant and its fruit was covered.

In cases where there are signs of infection or where infection is feared from this fungus it would be desirable to spray the plants early with the simple sulphate of copper solution, which is so weak that it could not injure the foliage or the young fruits, and when the disease appears upon them the Bordeaux mixture should be used very carefully and in a fine spray.

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### THE ONION FLY (*Phorbia cepetorum*, Meade).



*a* and *b*, Larva, natural size and magnified; *c* and *d*, Pupa, natural size and magnified; *e*, Fly magnified; lines showing wing expanse and length of body.

The onion fly causes serious injuries to the onion crop in some seasons, and it appears to be on the increase in this country. It is also a source of great trouble to the onion growers in the United States, and in Continental countries. In English market gardens, and market garden farms where onions are extensively cultivated, large percentages of the plants are frequently quite spoiled



by the attacks of this fly, while in cottage gardens and allotments the whole of the plants on the small onion beds of the cultivators are often ruined by successive generations of the same insect.

The first indications of the infestation are shown by the longest, or first leaves, of the onion plants becoming yellow, and afterwards whitish; if these are pulled they come easily away from the stem, and gradually the other leaves become yellow and decay. The bulb will be found to be small and badly shaped, with yellowish maggots within its folds, which feed upon it, and eventually cause it to become rotten and useless.

In other cases the outer, or lower, leaves of the plants are seen to be lying on the ground, still green, while the leaves remaining upright and green feel soft and flabby.

If infested plants are examined it will be generally noticed that in the case of very young plants they are nearly eaten through, just above the swelling bulbs, by the maggots, or larvæ, of the fly. In older plants with large bulbs, maggots of all ages and sizes will be found within the bulbs.

Onion plants that become yellow and show signs of drooping should be examined for maggots just below the surface of the ground.

### *Life History.*

The male and female flies of this species differ slightly. The male is dark grey in colour, with black bristles. The eyes are red and close together. Upon the thorax are four bright brown stripes and four rows of black bristles. The abdomen is ash-coloured, rather narrow, having triangular black spots down it which almost join each other. The legs are pithy.

In colour the female fly closely resembles the male, but the abdomen is dark grey, with the end more pointed than in the male; and the eyes are wide apart.

From six to eight eggs are laid on an onion plant, upon the leaves and just above the ground. The eggs, which are white, long, and somewhat oval, can be easily seen without a glass. Maggots (larvæ) come from the eggs in from five to seven days, according to the temperature and other conditions, and make burrows down into the root, or bulb, between the sheathing leaves. They feed upon the contents of the cylindrical root which can hardly at this stage be styled a bulb, and move on to other plants. Later on, when the bulbs are larger, they are occupied by many maggots, which feed on them and cause them to become rotten. Sometimes the bulbs will be seen to be swarming with maggots, and the earth round them is also infested. The maggot continues in the larval state for a period varying from 13 to 15 days, feeding throughout this period upon the onion roots, or bulbs. It is nearly four lines (one-third of an inch) in length, dull yellowish white, or dirty white, in colour. The head

part of its body is sharply pointed, and the head, furnished with a pair of black hooks, can be extended at will; the tail end is cut off obliquely flat, and in the centre there are two brown spiracles or breathing tubes, while on the margin of the flat tail end there are eight teeth, or projections.

Before pupation takes place, the maggot usually goes into the earth. Sometimes pupation occurs within the onions. The pupa, or rather the pupa case or puparium, is chestnut brown, oval, not so long as the maggot, and has the same toothlike projections on the caudal end. On opening this puparium the white pupa will be seen with the embryonic wings of the future fly, which appears in from 13 to 16 days after pupation.

There are several generations of this insect. The first has been seen as early as the 25th of April in very forward seasons, and flies have been noticed through the autumn, and as late as November. Curtis states, moreover, that he saw them alive in December.

#### *Methods of Prevention and Remedies.*

Spraying onion plants with offensive compositions is a good way of preventing infestation. Paraffin emulsion is as good a compound as any for this purpose. It may be made by thoroughly mixing together 3 pints of paraffin and  $\frac{1}{2}$  lb. of soft soap with one gallon of boiling water. Mixing may be done by passing the composition through a hand pump, once or twice; 6 gallons of water should be added to dilute it sufficiently, so as not to burn the onion leaves. When the onion leaves are young and very tender 7 or 8 gallons should be added. It may be applied on small plots of onions with a Knapsack machine; on large breadths with a horse distributing machine. The spray should be dense and in the form of mist. This operation should be performed early in the season, when the onions have established their leaves.

Spraying must be repeated, probably twice or thrice, especially if heavy showers fall after the process.

When onion plants in a field or garden are noticed to droop and wither, all such plants should be taken up and burnt, or deeply buried. They must be taken up by means of a little three pronged fork, or some other handy tool, so that every particle of bulb and leaf is removed.

Wherever it is possible, onions should not be grown again, for at least one season, on land where this crop has been infested, as the pupæ remain in the ground during the winter. All pieces of bulbs should be got off infested land, as pupæ occasionally remain in the bulbs. If it is necessary to take two successive crops of onions on infested land the ground should be dug very deeply, two spits deep, and well limed or gas-limed.

Sprinkling the young onions with soot has been adopted with some advantage, but the pungent odour soon evaporates and it is necessary to give several dressings.

Kainit, broadcasted on land cropped with onions, at the rate of 5 cwt. per acre, has been found to be of great use. The action of kainit, as a preventive of some kinds of insect attack in larval form, has been often noticed, though it is rather difficult to define the form or nature of its action. In the case of the onion maggots it would appear that kainit prevents their progress from one onion to another, either by the shape of its crystals, or by some pungent emanation from it. It is not the stimulus that it gives to plants which makes them grow away from their enemies, as kainit is not by any means a forcing manure. Kainit should be hoed very lightly in after it has been broadcasted on.

Nitrate of soda, applied at the rate of  $1\frac{1}{2}$  to 2 cwt. per acre, should be put on infested land in order to stimulate the plants and make them grow away from the enemy.

Lime and soot, mixed together in the proportion of 1 bushel of soot to 2 bushels of lime, very finely powdered and broadcasted over the infested plants, and lightly hoed in, has been efficacious in a degree.

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#### CARPOCAPSA POMONELLA IN WALNUTS.

In November last the Board of Agriculture received some walnuts attacked by an insect which, they were informed, had caused the nuts to drop off prematurely in some cases, while in other cases it had been found in the nuts stored for use. The nuts that were sent showed no external signs of infestation, but upon cracking a nut a caterpillar was found within it feeding upon the contents. This was apparently the larva of the Codlin moth, *Carpocapsa pomonella*, being close upon one fourth of an inch long, pink in colour, with a brown head, but as it was like the larva of other *Carpocapsidae*, the nuts were kept until the 18th of June, when the moths appeared. The moth was *Carpocapsa pomonella*, having brownish upper wings streaked slightly with grey, and near the hinder corner a patch of metallic lustre; the hinder wings and abdomen were brown with grey tinges. The contents of the nuts were only partially eaten by the caterpillars, but they were quite spoilt by the frass, the *débris* of the cocoon, and the pupa case of the moth. All the nuts from which moths came had been gently cracked in November and left with the shells upon them. If they had not been thus treated the moths could not have emerged, and in all probability would not have been formed. It would seem that the larva leaves the nut, as a rule, before it has become hard, and that only the belated larvæ are imprisoned by the hardened shell.

In the ordinary course the larva comes from the nut while the shell is yet comparatively soft, and, ensconcing itself in the cracks of the bark, spins a cocoon, in which it remains until



the spring, and then changes to a brown shiny pupa, from which the moth comes in June and July, and lays eggs upon the fruit.

In 1895 it was noticed that the walnuts upon a tree in an apple orchard were injured, and that there were holes at their lower ends, made through the then soft shell and the green husk. Upon cutting the nuts open, slight injury was apparent to the contents and some frass; no caterpillars, however, could be found, so that it seemed that the instinct of the caterpillars led them to decamp before the shell had become hard. In his monograph on "Insects Injurious to the Walnut," Mr. Theobald states that he found the larva of *Carpocapsa splendana* in walnuts and feeding upon them. The caterpillars of this species, Mr. Theobald points out, live usually in chestnuts, just as those of the *Carpocapsa pomonella* feed naturally on apples.

The only methods of preventing this attack are those recommended in the case of apple trees. Grass round infested trees should be brushed or fed off close and collected and burnt, so as to destroy the larvæ that have made cocoons in the grass or rubbish under the trees. As a rule the larvæ ascend the trees and make cocoons in the interstices of the bark. The most important method of prevention, therefore, is to fasten bands of old sacking, old cloth, old manure bags, or other suitable material round the trees, not far from the ground, to stop the larvæ and collect them, so that they may be taken from the bands and destroyed.

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THE HOP BUG (*Calocoris fulvomaculatus*, De Geer).



1. Perfect insect (mag.).



2. Pupa (mag.).

This insect is different from that described and figured in the Journal of the Board of Agriculture in December 1895, although it injures the hop plants in a similar manner and has somewhat similar habits.

It was very troublesome in the spring of this year in many hop plantations, especially where the bine was at all backward and weak. The attack commenced about the middle of May

Upon many of the bines there were exudations of sap, looking like drops of dew or rain, but examination showed that it was sap issuing from punctures made by insects, and evidently by the Hop Bug, *Calocoris fulvomaculatus*, for many could be found upon the hop plants though they were not often seen at work, as they move directly the poles are approached, and dodge round and round to avoid inspection. It is not the shadow of the intruder that warns them, but they seem to feel instinctively that he is present, and get out of sight as quickly as possible.

Serious harm was done in many plantations. The growth of the bine was completely checked, and it was so weakened that it was not able to bear the attacks of aphides so well as strong and healthy plants.

It is a feature of this infestation that the hop bine<sup>7</sup> trained on cocoa-nut fibre strings and upon wires was not infested by these insects. They evidently do not like the sharp points of the fibre and the smoothness of the wires; while at night and in bad weather these do not supply the shelter afforded by the cracks and holes in the poles. Poles also serve as resorts for the hibernation of the insects, and therefore it would be expected that the infestation of hop grounds, poled in the old-fashioned manner, would be much greater than in "wire," or "string work," independently of the evident objection on the part of the bugs to string and wire.

The larva of the hop bug is about the fourth of an inch in length. In colour the thorax and body are mainly light, varying to dark brown with greenish shades; the abdomen is greenish with red borders. The head has a deep brown, almost a bronze hue; the antennæ have four joints; the top of the second joint is black for some distance, and the lower end of the third joint is yellow. The rostrum is yellow, very long, and has a black tip. It is composed of a case with a groove open in front as far as the short black tip. In this groove a long siphon, or tube, attached to the head, moves and works. When the end of this siphon, or sucking apparatus, is inserted into the bines, and the insect is sucking up sap, the case is bent nearly at right angles to the tube, leaving this quite exposed, except at the black tip which guides and supports it, and in which it works. Hop bugs in confinement were supplied with pieces of hop bine, which they at once attacked, so that the action of the rostrum was frequently witnessed.

The pupa resembles the larva except that the pupa has rudimentary wing cases, which become more developed after successive moults. By the middle of June the perfect insects are abundant. They do not at first use their wings readily, and continue feeding, and dodging round the poles in the same way as the larvæ and pupæ, but afterwards they fly away at once on being disturbed. In general colour the perfect insect is light or yellowish brown, covered with golden coloured hairs. Its head is black, with yellow antennæ, having parts of some of the

joints black, while the rostrum is like that of the larva. The wings are very large and brilliant, with black membranes, and the legs resemble those of the larva. It is about the third of an inch long, with a wide wing expanse.

By the end of the second week in July the *Calocoris* disappears, having laid eggs, presumably upon the hop plants, and it may be upon the poles, or upon plants and weeds near the hop grounds.

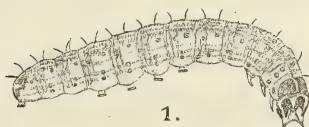
Some hold that the insect hibernates in the perfect state among grass, weeds, and in the cracks of hop poles. Others believe that hibernation is passed in the egg stage.

Very little can be done to check this attack. In its early stages tapping the poles and holding tarred boards under them to catch the bugs may be of some advantage. But later on, when they have acquired wings, this is of no use.

If washing with offensive solutions is adopted against the hop bugs, it must be done while they are in the larval or pupal stage. But washing is far from satisfactory. Plants have been washed with various solutions of quassia, soft soap, paraffin, carbolic acid, and with special compositions, without much apparent effect upon these insects. Their food is the sap from the bine, which cannot be made poisonous, and it is difficult to render the surface of the bine so offensive that they will not pierce it.

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#### SURFACE CATERPILLARS.



1.



2.

1. Caterpillar of the Turnip Moth (*Agrotis segetum*).
2. Caterpillar of the Heart and Dart Moth (*Agrotis exclamations*).

The attacks of these caterpillars have been unusually noticeable this season (1896), as the growth of many of the plants on which they feed was checked by the drought. Swedes and turnips, for instance, were very backward, and a thin plant generally, so that the action of these caterpillars upon them, which would probably not have been of great consequence in ordinary seasons, has been marked and disastrous in many cases. Mangels again were seriously affected, being as a rule a weak and backward plant, and, by reason of the lack of moisture, unable to grow away from the caterpillars. Good-sized mangel bulbs



examined in the middle of July were found to be completely scooped out, and their contents eaten by the caterpillars of *Agrotis exclamationis*, which appeared to be more plentiful than those of *Agrotis segetum*.

Surface caterpillars cause serious injury to many crops of the farm, market-garden, and garden, and particularly to mangels and turnips. They, in common with caterpillars of different species, are styled "surface caterpillars," because they hide just beneath the surface of the soil, and attack plants of most kinds just at, or just below, the surface, and always in the night-time. They correspond with the "cutworms" in the United States, so-called because they cut the stems of plants asunder. Some of these American "cutworms" belong to this same family of *Agrotis*.

Young mangel plants, and mangel plants whose growth is retarded by drought, are frequently cut through by these caterpillars just below the surface of the earth, and potatoes are also attacked, particularly where earthing has not been well done. Turnips and swedes are often spoilt by these caterpillars, which completely clear out the insides of the bulbs, or so injure them that they become rotten.

Lettuces, carrots, and beet-root are also frequently attacked by the caterpillars of the Garden Swift Moth, *Hepialius lupulinus*, but those of the *Agrotis* are far more destructive to them. Wheat and other corn plants seriously suffer from *Agrotis* caterpillars, especially wheat in mild winters. This injury is often attributed to wireworms. Grasses in pastures, particularly those with thick bulbous stems, are often eaten by these caterpillars, which do more injury to grass land than is generally imagined.

There is no doubt that mild winters, without any frost, tend in some considerable degree to account for unusual numbers of surface caterpillars, as they pass the winter in the ground in the caterpillar state, and might be affected by frost, or at least by frequently alternating frost and thaw. Mild dry springs are favourable for pupation, egg-laying, and for the caterpillars while small, and dry weather later on prevents the caterpillar disease, which is always more prevalent in rainy seasons.

### *Life History.*

The female moth of *Agrotis segetum* is rather larger than the male, and has dark black-brown wings, while the wings of the male are greyish brown. The antennæ of the male are much pectinated, while those of the female are simple. In size, *Agrotis segetum* differs little from *Agrotis exclamationis*.

In *Agrotis exclamationis*, the female is reddish-brown, with the fore-wings darker than the hinder wings. The colour of the male is paler brown, and its antennæ are slightly pectinated, the antennæ of the female being plain. The wing expanse

is about  $1\frac{1}{2}$  inches, and the length of the body is about three-quarters of an inch.

The habits are the same in both species. Eggs like poppy seeds are laid at the beginning of the summer, and fastened near the ground to the leaves of cultivated plants, plantains, goosefoot, chickweed, and many cruciferous weeds. Caterpillars come from these in from 10 to 12 days, and begin to feed at once. When quite full-grown the caterpillars are nearly  $1\frac{1}{2}$  inches long. One species can be distinguished from the other only by careful inspection. Close observers will note that the *Agrotis exclamationis* caterpillars (No. 2) are darker than those of *Agrotis segetum* (No. 1), being decidedly brownish, while the others are grey. The most important distinction, as pointed out in Buckler's British Moths, is that in *Agrotis exclamationis* the quite black spiracles are always larger than the spots before and behind them, and that upon each of, at least, the first five segments, there is a pear-shaped blotch, rather darker than the body colour.

These caterpillars feed from their first appearance in summer to the spring of the next year, though probably a few of them, as stated by Mr. Barrett in his *Lepidoptera of the British Isles*, "appear to feed up rapidly by the middle of August, "producing moths the same autumn, and reinforcing the great "army of wintering larvæ." During severe frosts they retire to cells in the earth. In the spring the caterpillars change into reddish-brown pupæ, in earthen chambers, in which state they remain for about 28 days.

#### *Methods of Prevention and Remedies.*

To prevent a recurrence of the attack it is desirable to lime infested fields with ordinary lime, or gas and lime, and to plough deeply. Turnips and swedes that are infested should be fed off early by sheep. Land after mangels, where there has been infestation, should be limed, ploughed deeply, and not cropped again till the spring, if possible, and ploughed again before it is sown. It would be dangerous to sow wheat at once after a badly infested crop of turnips, swedes, or mangels.

Weeds must be kept down in fields and gardens, especially cruciferous weeds, as charlock, which afford shelter for eggs, and food for the young caterpillars.

The frequent stirring, with horse and hand hoes, of land having crops in drills, such as turnips, swedes, and mangels, disturbs the caterpillars and kills some of them. Drawing drags and harrows over young swedes, turnips, and mangels, when possible, is also of considerable advantage.

Fresh, pure, finely-powdered soot scattered on both sides of infested plants and lightly chopped in has proved to be of considerable benefit. It keeps the caterpillars off, at all events for a time, and gives the plants a chance to grow away, at

least in ordinary seasons. In seasons of extreme drought this application should be repeated.

Lime mixed with soot in the proportion of 3 or 4 bushels of very finely triturated lime to 1 bushel of well powdered soot, forms a pungent compound found to be very useful in similar caterpillar-attacks, and should be sprinkled close to infested plants. A little sulphur mixed with this composition, at the rate of 1 lb. to a bushel of soot, adds to its offensiveness.

Kainit, put on in a similar manner, near to infested plants, has a marked effect upon the caterpillars.

It is desirable to force the plants on with dressings of artificial manures, as guano for turnips, and nitrate of soda, in small repeated doses, for mangels.

Potatoes should be well "earthed" where there is any fear of infestation, and the earthing done early in the season.

In market-gardens and gardens, and in the case of valuable crops, as cabbages, lettuces, celery, radishes, carrots, and herbs, hand picking is advocated. The caterpillars are generally near the plants, just under the surface of the earth, which should be moved with a sharpened stick or a small hoe, and the caterpillars picked out. This is, of course, an expensive process, but it might pay to adopt it in some cases. In America baits of clover, lettuce, &c., sprinkled with Paris Green are placed near infested crops to attract and poison the caterpillars.

Birds, as partridges, rooks, gulls, starlings, and plovers, are devourers of these caterpillars, and should be encouraged. Hoeing and dragging infested turnip-fields give the birds exceptional chances to get at these night-moving insects.

Moles also eat them, and should be protected, as they do much good and but little real harm.

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## GENERAL AGRICULTURAL NOTES.

## DAIRYING IN NEW SOUTH WALES.

According to a work prepared by the Government statistician of New South Wales,\* dairy farming has made much progress of late years in that Colony, and there is every prospect of its development into a most important industry. The increasing popularity of this branch of farming is attributed largely to the introduction of the factory system in convenient centres, the great improvements effected in dairy appliances, and the establishment of direct railway communication with Sydney. It seems that dairying is not now, as formerly, wholly confined to farmers, since many graziers in a large way of business, especially near the coast, have lately turned their attention to the industry.

When the factory system was first introduced the factories were mostly co-operative, and the processes of cream separation and butter-making were carried on together. This arrangement is gradually dying out, and central butter factories, fed by numerous separating establishments called "creameries," are taking the place of the others. The advantages gained from this change are said to be considerable; a butter of more uniform quality is made in each centre, and there is a reduction in the cost of manufacture owing to the greater quantity made and the use of improved appliances, such as refrigerators, which the larger establishments can profitably provide.

Most of the native grasses are particularly suitable for dairy cattle, as they possess milk-producing as well as fattening qualities. The mildness of the winter season enables dairymen to avoid the heavy expense of stall feeding, and although a certain amount of winter fodder is grown it is given to the cattle in the fields. The crops most popular for this purpose are maize, barley, oats, rye, lucerne, and the brown variety of sorghum or "planter's friend."

The area of land in New South Wales under green crops and permanent artificially-sown grasses has been largely extended during the last few years; in March 1895 it amounted to over 415,000 acres. The produce of this land is devoted to the depasturing of dairy cattle, and as the area is still below the present requirements an extension of this form of cultivation may be anticipated.

The number of dairy cows is returned as 438,211. Constant attention to the peculiarities of the climate, as well as the judicious crossing of strains, is stated to have developed a breed of cows peculiar to Australia, especially in the coast districts immediately south of Sydney; but all well-known breeds of milkers are found in New South Wales. The milk yielded by the dairy cows of the Colony may be set down at

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\* The Wealth and Progress of New South Wales; by T. A. Coghlan, Government Statistician. Eighth issue. 1895.

about 153,374,000 gallons, of which the quantity consumed in making butter and cheese during 1895 was about 76,000,000 gallons. The estimated weight of the butter made was 27,359,695 lbs., and of cheese 4,820,412 lbs.

The yield of milk per cow is a very variable quantity; in some of the principal dairy centres as much as 500 gallons is returned as the yearly average, while in other districts the yield falls far short of this. For the whole Colony the average may be set down at  $1\frac{1}{2}$  gallons per day for every cow milked, but the cows are only milking for about nine months of the year, so that each yields approximately 350 gallons in the year.

The quantity of milk required to make a given weight of butter varies considerably according as to whether the milk is treated by a separator or in the old fashion. A great proportion of the butter now made is what is usually termed factory or separator-made, and the average quantity of milk used per lb. of butter produced is 2.6 gallons, or 26 lbs. 2 oz. For ordinary hand-made butter the quantity required is about 3 gallons, so that there is a saving of about 13 per cent. by the former method in addition to the extra value of the butter produced, the price in the Sydney markets during 1894 having been from 1*d.* to 2*d.* per lb. higher for the factory-made than for the ordinary kind. The number of persons employed in dairy farming in 1894 was 25,774; of these, 12,055 were males and 13,719 females. Included in the total are 1,051 persons employed in the various factories, which numbered 395. The produce of the factories in 1894 was 17,567,646 lbs. of butter and 1,656,703 lbs. of cheese. The annual output of butter in the Colony is now estimated to exceed the local requirements during the summer months by nearly 75 per cent. and nearly all the surplus is exported to the United Kingdom.

No statistics respecting the manufacture of butter and cheese in the Colony were collected prior to 1887, when the quantity made was 16,106,000 lbs. and 5,780,000 lbs. respectively. The course of manufacture since 1889 is shown in the following table, which gives the quantity of butter made in each of the last seven years:—

Year ended 31st March.	Butter.		
	Factory.	Farm.	Total.
	Lbs.	Lbs.	Lbs.
1889 - -	—	—	15,550,440
1890 - -	—	—	17,600,264
1891 - -	8,049,656	10,484,474	18,534,130
1892 - -	7,661,197	10,701,700	18,362,897
1893 - -	10,141,066	11,257,234	21,398,300
1894 - -	15,635,360	10,755,484	26,390,844
1895 - -	17,567,646	9,792,049	27,359,695

## DAIRYING IN CANADA.

In Canada a comparatively new departure in dairying has been made in the fitting up of cheese factories for manufacturing butter from October until May. Two winter dairying stations were established in Ontario under the charge of the Dairy Commissioner in 1891. During the winter of 1893-94 seven of these butter-making stations were conducted by the Dairying Service of the Department of Agriculture, and ten were operated during the winter of 1894-95. A large number of cheese factories have been fitted up by the proprietors for the manufacture of butter during the winter, and this new industry may now be considered as established in the province of Ontario and well introduced into the other provinces. It appears that the direct revenue from the sales of butter is not the only advantage which results to the farming interest from an extension of winter dairying. By means of it the number and capacity of the cows which can be reared and kept upon farms are increased and improved; and by the use of skim-milk and buttermilk large numbers of swine can be reared and fattened.

The extension of dairying in Canada has been, however, mainly in the direction of cheese-making, as will be seen from the following table, which shows the exports of butter and cheese of Canadian production for each of the last five years.

Year.	Butter.		Cheese.	
	Quantity.	Value.	Quantity.	Value.
	Lbs.	£	Lbs.	£
1891 - - - -	3,768,101	125,453	106,202,140	1,981,000
1892 - - - -	5,736,696	220,012	118,270,052	2,427,586
1893 - - - -	7,036,013	270,170	133,946,365	2,793,223
1894 - - - -	5,534,621	228,247	154,977,480	3,226,706
1895 - - - -	3,650,258	145,308	146,004,650	2,969,375

There is said to be much less difference than used to prevail between the qualities and values of the cheese from the different provinces and the different sections of each province. The methods of manufacture are now nearly uniform throughout the whole Dominion; and while the districts which were formerly backward are now nearly abreast of the foremost in quality of product and in market price obtainable, the dairymen in the districts which were formerly far ahead have also been gainers by the general improvement.

As the climate of Canada imposes a period of at least six months during which cattle must be fed in stables, more attention is being given every year by dairymen to the growth of Indian corn for fodder. Fed either as weather-dried stover or as ensilage, it is a juicy, wholesome, cheap feed for milking



cows ; and the possibility of growing heavy crops of it per acre nearly everywhere in Canada puts the farmers, in regard to the cost of production, on a footing equal to, or better than, that of their competitors in other countries where cows can be fed on pastures for a longer part of the year.

In some places horse-beans (*Faba vulgaris*, var. *equina*) have been grown with satisfactory results as a fodder crop. On the Central Experiment Farm as much as 12 tons per acre of green fodder was obtained from this valuable plant.

With the object of stimulating the butter export trade a cold storage service was inaugurated in the summer of 1895, and arrangements were made whereby refrigerator cars for butter were run during the summer on the main lines of railway leading to Montreal. These picked up the small lots of butter offered weekly. The shippers of butter by these cars and routes were allowed to ship at the usual "less-than-carload rates," without any charge for the icing or special service. As far as space permitted, merchants were allowed to use these cars for the shipment of dairy and creamery butter between points at which the cars touched.

Arrangements were also made for the cold storage of fresh-made creamery butter and for the fitting of insulated and refrigerator chambers on steamships to Bristol, Liverpool, and Glasgow. The chambers were constructed so as to thoroughly isolate the butter and prevent it from being heated by any rise of temperature outside the chamber during the voyage. Galvanised iron tanks were filled with ice, to cool the interior of the chamber and the exterior of the packages heated in transit from the cold storage warehouse to the ships.

Trial shipments of cheese in cold storage compartments were made during the summer, and the results from these trial shipments were so satisfactory that it is probable that hereafter advantage will be taken of cold storage service for the carriage of large quantities of cheese during the summer to Great Britain.

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#### WHEAT-GROWING IN NEW SOUTH WALES.

The cultivation of wheat in New South Wales during the past thirty years has been very irregular. From the work issued by the Government Statistician, to which reference is made at the foot of page 167, it appears that for some years prior to 1867 the area of land under the crop remained almost the same from year to year, being little more than 125,000 acres. In 1867, however, the wheat area increased to 175,000 acres, and at that acreage it remained practically unaltered for twelve years. Then more land was again laid under wheat, and in 1878-9 the area had increased to 233,252 acres. Since then the area under this cereal has been greatly extended, the maximum

being reached last year with 647,483 acres, with an average yield of 10·9 bushels per acre, or 2·6 bushels below the average of the previous thirty years, viz., 13·5 bushels. During this period the lowest yield was 4·8 bushels, obtained in 1888-89, and the most bountiful, 17·4 bushels per acre, gathered during 1886-7. During the six years, from 1866 to 1872, the yield per acre appears to have been comparatively a small one, the mean being only 11·13 bushels. Then followed a period of fair seasons, extending over seventeen years, when the average fluctuated between a minimum of 10·5 bushels obtained in the season of 1885-6, and a maximum of 17·4 in the season 1886-7. In 1889 the average descended to 4·8 bushels per acre, while the mean for the whole period extending from 1871-2 to 1894-5 was 13·3 bushels to the acre.

Dividing the last quarter of a century into quinquennial periods, the average yields per acre have been as follow :—

Quinquennial Period.	Average per Acre.	Quinquennial Period.	Average per Acre.
	Bushels.		Bushels.
1871-1875	12·93	1886-1890	12·42
1876-1880	15·02	1891-1895	11·74
1881-1885	15·37		

In spite of the lower average for the last five years, it is believed that from equal qualities of soil, a better yield is now obtained than twenty years ago, a result due largely to improved farming. At the same time it is pointed out that the occurrence of rust, smut, and other forms of disease in wheat has been less frequent and less general in recent years.

It is interesting to note that agriculture is gaining ground in those districts where the greater number of the huge freehold estates, accumulated by pastoralists under the auction sales and improvement clauses of the Land Act of 1861, are situated. It is in the valleys of the Murray, the Murrumbidgee, and the Lachlan that the struggle between squatter and selector has been fiercest, and where the most remarkable increase of agricultural settlement, both as regards wheat-growing and agriculture generally, is now exhibited.

There are said to be unmistakable signs that in the near future increased attention will be directed to the cultivation of wheat in the Colony, and there is evidence that the yield is sufficient to make the crop payable.

If the average production of wheat per acre in New South Wales be compared with that of the other Colonies of the Australasian group, it will be found that this Colony occupies a satisfactory place, its average being exceeded by that of only one Colony of continental Australia, viz., Queensland.

It seems that the cost of raising wheat in New South Wales depends entirely upon the size of the holding. A large farm with first-class agricultural appliances is capable of being worked at nearly half the cost of a small one, and in cases where the initial expenses of suitable machinery have been disbursed, the cost of production varies from 1s. to 1s. 3d. per bushel. Leaving out of consideration rent, interest, and carriage, the cost of growing wheat in New South Wales is estimated to be approximately as follows:—On large farms with first-class appliances, 15s. 6d. per acre; on moderate sized farms with good appliances, 20s. per acre; and on small farms, 27s. per acre.

The rates given include seed, expenses incurred in the preparation of land for cropping, and in sowing and harvesting, as well as depreciation in stock and appliances. The cost of bags is, however, not included.

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#### LIVE STOCK TRADE OF URUGUAY.

According to a statement which appeared in a recent number of *La Agricultura*, the exports of live stock from Uruguay in 1895 comprised 95,387 cattle, 234,898 sheep, 4,941 swine, and 26,174 horses, while the imports included 265,943 cattle, 23,082 sheep, 27 swine, and 2,683 horses. As regards the exports, 94,085 cattle and 143,536 sheep were consigned to Brazil; 514 cattle and 86,421 sheep to Argentina, and 788 cattle to the United Kingdom.

The exports of sheep in 1895 were the largest recorded for many years, and exceeded those of the previous year by nearly 184,000 head. During the past 15 years the exports of this class of stock from Uruguay have exceeded 100,000 on only three occasions, viz., in 1882, 1885, and 1892, when the numbers were 110,000, 153,000, and 123,000 respectively.

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#### IMPORTATION OF HORSES INTO HOLLAND.

By an order issued by the Dutch Ministries of the Interior and of Finance, the importation into and transit through Holland of horses, asses, and mules from Great Britain and Ireland, as well as the flesh of such animals, is prohibited after the 5th July 1896. Exceptions to this prohibition will only be made in the following cases:—

- I. As regards importation,—Horses, asses, and mules may be imported (a) when bought for the army on account of the State, (b) if they are certified by the nearest district veterinary surgeon or his deputy to be free from all suspicion of glanders. District veterinary surgeons and their deputies are authorised, in the case of suspected animals, to cause them to be subjected to injection with mallein, at the expense of the interested party, or to



admit them upon condition of their being slaughtered on the spot, within a limited time, and with due regard to the regulations in force for rendering harmless the remains of suspected cattle, (c) the flesh of horses, asses, and mules, to which the respiratory organs are attached, may be imported if it is certified by the nearest district veterinary surgeon or his deputy to be fit for consumption.

- II. As regards transit,—(a) horses, asses, and mules may be introduced if, isolated from other cattle, they are conveyed away by railway immediately after disembarkation, without any further change of conveyance, in separate, closed, and sealed trucks; (b) the flesh of such animals may pass through the country if it is so packed that no danger of infection can exist.

### LIVE STOCK CENSUS IN SWITZERLAND.

According to the *Zeitschrift für Schweizerische Statistik*, the following are the results of the census of live-stock recently taken in Switzerland, the figures for 1886 being added for comparison :—

						1896.	1886.
Horses	-	-	-	-	- Number	108,529	98,622
Mules	-	-	-	-	- "	3,116	2,742
Asses	-	-	-	-	- "	1,735	2,046
Cattle	-	-	-	-	- "	1,304,788	1,212,538
Pigs	-	-	-	-	- "	565,781	394,917
Sheep	-	-	-	-	- "	271,432	341,804
Goats	-	-	-	-	- "	414,968	416,323
Bee-hives	-	-	-	-	- "	253,108	207,384

It will be seen that horses, cattle, and pigs have considerably increased. Sheep, on the other hand, show a marked decline, while the number of goats has remained almost stationary.

### PLUM CULTURE IN BOSNIA.

The Government of Bosnia and Herzegovina has published information on "the Bosnian plum," from which the following extracts have been reproduced in a recent volume of the United States Consular Reports :—

Bosnia holds a prominent position at present among the plum-producing countries. The northern part of this province is chiefly concerned in the production, as in this district the two most important factors in the cultivation of the fruit are favourably combined. The days are, as a rule, warm, and are followed by cool dewy nights, and the soil consists of a calcareous loam, which is drained by numerous streams and supplies the trees

with sufficient moisture at every season of the year. There has thus been developed in Bosnia a special variety of plum tree, bearing a fine, large fruit, which, when fully ripe, contains a very high per-centage of sugar.

The annual production is considerable. In 1894 it amounted to 183,111 tons, while the quantities produced in the four previous years were 70,960 ; 93,990 ; 89,561 ; and 128,043 tons, or an average of 95,639 tons.

Some of the fruit is consumed fresh, and a quantity is used for making brandy, liquor or jam ; but the bulk of it is dried.

The plum production of Bosnia was very considerable before 1878, and the dried Bosnian fruit was well known and in great demand under the name "Turkish plum," not only in Europe, but also in America. When the Government of the country was taken over by Austria-Hungary, great efforts were made to improve the fruit and increase its sale. Accordingly, experimental stations were established, which may be looked upon as nurseries for fruit culture, and which, though instituted only a few years ago, have already considerably increased the production. Moreover, very favourable results have followed from the introduction of new drying ovens after the French pattern.

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#### PROPOSED AUSTRALIAN EXPORT REGULATIONS.

At a conference between the Ministers of Agriculture of the Colonies of New South Wales, Queensland, South Australia, and Victoria, recently held at Adelaide, it was resolved to endeavour to secure uniform legislation by the Colonies to carry into effect regulations to the following effect:—No meat should be placed on board any vessel for exportation unless such meat had been certified by an inspector as sound and free from disease. An uniform system of inspection and marking should be adopted with regard to dairy produce, fruit, and wine, and there should be a federal brand, having the words "Approved for export" in a semicircle above a crown, with the name of the Colony and of the grade of quality, each Colony to determine whether such inspection and marking be optional or compulsory. The producer should be assisted to overcome the difficulties attendant on the distance and the delay of the returns from the world's markets, either by direct advances by the State on f. o. b. value of approved produce, or by facilitating the obtaining of such advances by the issue of a certificate negotiable and payable on return of proceeds, or by such other method as may best suit the requirements of each Colony. The experts of the various Colonies in London should consult together and report through their Agents-General as to the best system of distribution calculated to obtain full value for agricultural products of Australia. The Colonies should join in exhibiting once a year for three years, at one of the principal agricultural shows in England, an Australian federal agricultural exhibit.

The conference further considered it desirable to adopt an uniform schedule for the collection of agricultural statistics; to assimilate the practice of branding stock throughout the Colonies; and to adopt uniform legislation with respect to diseases and pests affecting vegetation.

It was also resolved to ask the Government of Western Australia to assimilate their stock regulations to those in force in the other Colonies.

### VALUE OF FARM PROPERTY IN ONTARIO.

The Government of the province of Ontario have issued some statistics relating to the value of farm property in the province.

The following is a comparative statement of the results as published in the Statistical Year Book of Canada for 1895:—

	1884.	1894.
	£	£
Farm land - - - -	130,308,064	122,342,941
Farm buildings - - - -	36,122,276	42,514,910
Farm implements - - - -	9,964,731	10,735,452
Farm live stock - - - -	21,480,589	23,239,094
Total - - - -	197,875,660	198,832,397

It appears that the real property (lands and buildings) connected with farming was worth 166,430,340*l.* in 1884, and 164,857,851*l.* in 1894. The reduction in value, consequent upon the opening up of Manitoba and the North-west, and the decrease in the price of agricultural produce, has amounted, in the ten years, to 1,572,489*l.* The percentage of decrease is 0.9 per cent.

### EXPORTS OF PERISHABLE PRODUCE FROM VICTORIA IN 1895-96.

Mr. David Wilson, the Government dairy expert of Victoria, in his annual report to the Minister of Agriculture of that Colony, states that, owing mainly to climatic reasons, the exports of perishable produce through the Department of Agriculture in the season 1895-96 do not show an expansion of value. The autumn rains in 1895 were not only late, but also light and very partial in their distribution. This meant a scarcity of natural pasture in the winter. The spring also proved a dry one, with calamitous results to many of the butter factories in the northern districts of Victoria. A short season and a short supply of milk during the season greatly reduced the quantity of butter which it was estimated early in the year would be coming forward for export. During the shipping season 1894-95 there



were exported 11,584 $\frac{3}{4}$  tons of butter, valued at 1,081,243*l*. The output for the shipping season of 1895-96 only reached 9,386 tons in weight and 876,026*l*. in value. The low price of cheese in England during the season prevented extensive exports being made of this produce, the Australian milk-growers finding it more profitable to convert their milk into butter.

The efforts made by the Department of Agriculture during the season to encourage the export of a number of other food products, for which it was rightly believed that a profitable market existed in England, if the right quality could only be landed at the right time of year, are said to have been fully justified by the results.

The complete return of the shipments made through the Victorian refrigerating depôt for the season 1895-96 is as follows:—

Produce.						Quantity.	Estimated Value.
							£
Butter	-	-	-	-	-	9,386 tons.	876,026
Cheese	-	-	-	-	-	63 "	2,646
Mutton and lamb	-	-	-	-	-	92,726 carcasses.	57,953
Rabbits	-	-	-	-	-	498,751 pairs.	29,093
Hares	-	-	-	-	-	5,535 "	1,107
Game	-	-	-	-	-	1,515 "	190
Turkeys and geese	-	-	-	-	-	1,087 "	870
Ducks and chickens	-	-	-	-	-	5,725 $\frac{1}{2}$ "	1,431
Honey	-	-	-	-	-	908 cwt.	1,270
Eggs	-	-	-	-	-	21,200 doz.	795
Total	-	-	-	-	-	-	971,381

### POTATO CULTIVATION.

An article by M. Camon, Professor of Agriculture for the Department du Nord, which has recently been published in the French *Journal Officiel*, contains some observations on the cultivation of potatoes.

In speaking of the custom of cutting up large tubers into "sets" before planting, he observes that in many varieties this division causes no injury, but some, Imperators for example, are unable to stand the operation. When dividing the tubers for planting it is frequently the custom to cut them just before putting into the soil. The wound cannot dry in consequence of the moisture of the soil and the tuber frequently rots and fails to germinate. If it grows, it is often dwarfed or produces leaves which quickly turn yellow. This disease is not new, but it has only been studied of recent years by M. Prillieux, who attributes the cause to a very small bacillus, to which he has given the

name of *Bacillus caulvorus*. This bacillus is evidently the cause of the disease, but the result of numerous experiments shows that it attacks by preference varieties which, like the Emperor, are unable to bear dividing, and it is met with more frequently in clumps produced by cut tubers. It is therefore always desirable to expose the cut portions of the tubers for two or three days in an airy place. A thin skin will quickly cover the divided parts and will prevent all decomposition.

The system of germinating the tubers of early varieties before planting for the purpose of advancing the crop, has recently been applied to the late varieties. According to the experiments of M. Desprez, director of the experiment station of Cappelle, it has been shown that not only has the crop been rendered earlier, but the returns have been improved; in addition to which the crop appears to be richer in starch. The preliminary germination is done in flat boxes with divisions, in which the tubers are arranged, care being taken to turn uppermost the part where the eyes are most numerous. Budding quickly takes place, according as the boxes are placed in suitable surroundings, and the temperature kept nearly constant.

In the cultivation of the potato, the question of manure is one of great importance. This plant is not very exacting, but it only gives large returns when heavily and suitably manured. It seems from recent experiments that the nature of the fertilizer sensibly influences the quality of the produce. Without entering into the details of these experiments, it may be concluded in a general manner that the exclusive employment of nitrogenous manures is prejudicial to the development of starch; the simultaneous employment of nitrogenous manure with phosphates or potash has, on the contrary, a favourable influence on the production of tubers of a high per-centage of starch. Although this result has only a relative importance for the majority of potato growers, who cultivate this plant only for their consumption or for that of urban populations, it is otherwise in the case of those who cultivate the potato for the extraction of starch or alcohol.

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### IRRIGATION IN INDIA.

In the report dealing with the moral and material progress and condition of India during 1894-95 (H.C. 218) some interesting information is given relating to irrigation in India. The history of irrigation in India stretches back into remote antiquity, and many of the irrigation systems now administered by the officers of the Public Works Department are founded on the lines of old native works which have been restored and extended or re-modelled.

The class of works dealt with by the Public Works Department under the head of irrigation may be roughly divided into

canals and tanks, though these two kinds of works are frequently used in combination.

The storage of water in tanks for the purpose of irrigation is very common in Southern India. The works are for the most part of native origin; but much has been done under the British Government in repairing and improving old tanks, and in constructing new works in Madras, Bombay, Deccan, and Ajmere-Merwara.

Canal irrigation, in which the water is drawn directly from a river, has been practised on the largest scale and with the most successful results in the North-Western Provinces, the Panjab, and the deltas of the large rivers in the Madras Presidency. Irrigation canals are of two descriptions—viz., “perennial” and “inundation.” The former are furnished with permanent headworks and weirs, and are capable of irrigating large tracts of country throughout the year, independently of the local rainfall. The magnitude of some of the works of this class, which are almost entirely due to British enterprise and skill, may be judged by a few instances. The Ganges Canal, which has been in operation since 1854, and has cost Rx. 2,925,528, comprises 459 miles of main canal, and 3,961 miles of distributaries, and in the year under review supplied water to 351,637 acres. The Sirhind Canal in the Panjab, which was completed in 1887, has cost Rx. 3,793,999, and consists of 542 miles of main channels, and 4,655 miles of distributaries. In Madras the great deltaic irrigation systems of the Godaveri, Kistna, and Cauvery have respective lengths of main channel of 503, 329, and 844 miles, and together irrigate upwards of 2,000,000 acres. The inundation canals, which are peculiar to the Panjab and Sind, are of a much simpler and less costly description than the perennial canals. They are for the most part simply earthen channels, made without the expensive machinery of masonry dams and sluices, and are supplied with water by the annual rise in May of the Indus and its affluents. They constitute a very useful class of irrigation works, and in some cases have produced most successful financial results.

The works to which the preceding paragraph applies in most cases take off from the larger rivers, which, even in times of drought, can be depended upon for an unfailing supply of water. There is, however, a large class of works, chiefly tanks, in which the supply of water is more or less dependent on the local rainfall, either directly or through the medium of the smaller rivers which dry up in hot seasons. There remains the method of irrigation more extensively used in India than any other—viz., that by wells, which, however, does not come directly within the scope of operations of the Public Works Department. There are great differences in the financial success of the irrigation works in various provinces. These are due to the various physical conditions of the country in regard to surface, soil, climate, and the absence or presence of large rivers with a



permanent supply of water, as well as to the differences in the character and habits of the people in different districts. The capital outlay, direct and indirect, during the past year, was Rx. 36,617,689, and the net receipts were Rx. 1,583,613. The total area irrigated amounted to 8,692,658 acres, and the total mileage of the canals in operation with their distributaries was 40,814 miles.

The immense systems of large artificial water channels, with which some parts of India are covered, would appear at first sight to offer unrivalled opportunities for water carriage. But though efforts have been made to organise navigation services on the larger irrigation canals, it cannot be said that, on the whole, they have met with a large measure of success. In many cases the receipts from the traffic have failed to cover the working expenses. It is, indeed, obvious that the canals being designed primarily for irrigation purposes must often be unsuitable from their alignment and level for navigation.

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#### MINISTRY OF AGRICULTURE IN DENMARK.

The Board of Agriculture have been officially advised, through the Foreign Office, of the creation, on May 22nd, 1896, of a Ministry of Agriculture in Denmark. Official business connected with agriculture in that country has hitherto been transacted by the Ministry of the Interior, in the Section of Agricultural Economy and the Section of Valuation of Landed Property. Under the new arrangement these two sections have been separated from the Ministry of the Interior, and have been joined to the Departments of Woods and Forests and of State Domains (both hitherto part of the Ministry of Finance) in order to form the new Ministry of Agriculture.

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#### IMPORTS OF LIVING PLANTS, FRUITS, AND VEGETABLES INTO RUSSIA.

With the view of preventing the introduction of phylloxera into Russia, regulations have been published by the Minister of Agriculture and Domains, prohibiting the importation of vines into the Russian Empire. Living plants may be imported from England by the customs-towns on the White and Baltic Seas, on the German frontier as far as Radzivolovo, and by Odessa, Batoum, and Novorossiisk (in this last case only with special permission), upon condition of their being accompanied by a certificate of origin from a competent authority that consignments of living

plants (1) contain no vines, (2) that the soil from which they come has no vines growing in it, (3) that there is no depôt of vines there, (4) that the locality is at a distance of at least one kilometre (two-thirds of a mile) from any locality infested with phylloxera. Living plants are held to be plants and their parts with the roots, as well as grafts. Branches, leaves, and flowers, bulbs and tubers from which all soil has been removed, are not treated as living plants. Grapes for the table may be imported through any customs-town open to living plants, but grapes must not be wrapped in vine-leaves, which are not admitted under any circumstances. Fruits and vegetables of all kinds may be imported, except by the south-western frontier.

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#### AGRICULTURAL IMPLEMENTS IN GAMBIA.

In the Annual Report on the Colony of Gambia for 1895, Mr. Administrator Llewelyn mentions that whilst he does not advocate the distribution of circulars or advertisements of all sorts, he thinks it possible that illustrated catalogues of agricultural implements, hand-ploughs, corn-mills, axes, tools, light carts or waggons for oxen, might give rise to inquiry in Gambia for such articles, and, if advertisers would send out a dozen copies to the officer administering the Government, he would know where and how to distribute them, and they would be more likely to bear fruit than if sent direct to a native head chief.

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#### LIVE WEIGHT STATISTICS IN FRANCE.

The French "Permanent Commission of Customs Values" decided in April last, on the proposition of the Director of Agriculture (M. Tisserand) that the value of cattle, at present shown by the number of head in the Statistical Reports of the French Customs, should, after the 1st July 1896, be given in kilogrammes of live-weight. This order applies to all cattle (oxen, cows, bulls, calves, heifers), sheep and pigs.

The monthly importation returns already contain all the data necessary for determining the values per live-weight (which is, in fact, the unit on which the Customs duties are based), and the returns will henceforth contain, as regards the exports also, the number and weight according to destination. The weight of these animals exported and imported, as well as their number, will thus in future be given in the monthly and annual trade returns.

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## TOBACCO-GROWING IN GERMANY.

More than one-half of the tobacco annually consumed in Germany is produced in the country, and, notwithstanding its cold climate, the cultivation of tobacco is quite an important agricultural pursuit. The area planted with this crop in 1895 was 52,394 acres, or 8,966 acres more than in the previous year. The largest quantity is grown in the Palatinate, owing to its climatic advantages where 13,413 acres were devoted to tobacco cultivation in 1894. The plantations in Baden and the Baltic provinces amount to 10,700 acres and 8,300 acres respectively.

The consumption of tobacco in Germany in 1894 was 159,392,500 lbs., or a little over 3 lbs. per head, whilst the tobacco crop in the same year yielded 84,473,658 lbs., or 1,946 lbs. per acre. Of the nine preceding years only one, 1889, shows a proportionately better crop. In that year the product was about 2,000 lbs. per acre, while the other eight years show much lower figures, 1888 only averaging 1,321 lbs. per acre. The quality of the 1894 crop was, on the whole, good, and in some cases excellent, so that it sold readily at good prices, the average being 4·58*d.* per lb., including tax, against an average of 4·25*d.* per lb. for the 10 years ending 1894. Land devoted to tobacco growing in Germany pays a tax of about 9*l.* 2*s.* per acre.

## AGRICULTURAL COLONIES IN SPAIN.

In 1855 a law was promulgated by the Spanish Government with the object of promoting the colonisation and cultivation of common and waste lands in the country. It provided that portions of such lands should be allotted to Spaniards and foreigners who desired to settle as agricultural colonists. The allotment was made provisionally in the first instance, but the colonist became the absolute owner within four years or earlier, provided that he had fulfilled the conditions of his contract, or in default the land reverted to the State, together with the buildings and any improvements effected by the colonist. Colonists established on common and waste lands were to be exempt from direct taxation, and from the billeting of troops. They were also to be exempt from all local rates except those for the maintenance of roads and highways. The head of a family had to furnish security to the amount of 15*l.* as a guarantee of his intention to fulfil his part of the contract. Foreign colonists and their sons born abroad were to be exempt from military service. Their household effects, machinery, and implements were admitted free of import duty. The State undertook to assist the colonists by furnishing materials, especially timber, for the construction of buildings.

The foregoing are the principal provisions of what appears to be the first Spanish law relating to the cultivation of waste and



common lands. As regards the measure of success which attended this effort of the Government, it would appear from a work by Señor Fermin, published by order of the Crown in 1864,\* that up to that year very little had been accomplished in the way of colonisation of waste and common lands. Señor Fermin pointed out that further concessions were needed to facilitate the development of rural industries, and that measures should be introduced which would promote a better system of cultivation and encourage labourers to settle in districts where they were needed.

In view of the recommendations of Señor Fermin, a law was enacted in June 1868 to encourage the formation of villages and agricultural colonies. This enactment not only repeated the provisions of the previous law of 1855, but went a good deal further.

One feature of the new measure was the concession of certain privileges, in the shape of exemption from taxation to parties building and occupying houses, with land attached for purposes of agriculture, in rural districts, the period of exemption being longest in the case of those houses situated at the greatest distance from the nearest village. Similar privileges were granted to persons erecting establishments for the purpose of carrying on rural industries. Owners occupying such houses or buildings, as well as their agents, tenants, and bailiffs, could not be called upon to take up any municipal office, except that of provisional mayor, until the houses were sufficient in number to constitute a village; they were also granted certain privileges in respect of partial freedom from military service.

The objects of these provisions were clearly to induce agriculturists to settle in the remote and sparsely populated districts, and to promote the formation of agricultural colonies or communities. When a new colony or group of houses situated at a greater distance than four and a half miles from a village consisted of 100 or more houses or buildings, the Government undertook to provide a doctor, a surgeon, a veterinary surgeon, a schoolmaster and a schoolmistress, all of whom were to be paid by the State for a period of ten years.

In addition to the establishment of agricultural colonies, the law of 1868 had for its object the encouragement of tree planting and the reclamation of marsh and uncultivated land.

Marsh lands which had been reclaimed and brought under arable cultivation or converted into pasture were to be exempt from all taxation for a period of ten years. Planted with fruit trees such lands were exempt for 15 years, and if converted into olive or mulberry plantations, the period of exemption from taxation was extended to 25 years. If lands which had been uncultivated from time immemorial, or had been out of cultivation for 15 years, were brought under arable cultivation, or converted into pasture, they were to be exempt from all addi-

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\* *Fomento de la Poblacion Rural por el exemo. Sr. D. Fermin Caballero.* Madrid, Imprenta nacional, 1864.

tional taxation for a period of ten years; if such lands were planted with olive or mulberry trees, the period of exemption was 25 years.

Uncultivated lands, situated on the banks of rivers or in an irrigated district, planted with timber were to be exempt from all taxation for 25 years. If such lands were situated in a dry plain, the period of exemption was 40 years; and 50 years, if in a mountainous district.

From the above summary of the principal legislation relating to the establishment of agricultural colonies in Spain it will be gathered that the intention of the legislature was to induce agricultural communities to settle in the uncultivated and sparsely-populated districts of the interior. It would appear, however, that the attempt has been an almost complete failure. It is stated, in a despatch received by the Board from Her Majesty's ambassador at Madrid, that the inducements offered have not led industrious peasants to cultivate to any extent a hitherto unproductive soil, but the manufacturers have not been slow to avail themselves of the concessions held out to the agricultural interest with regard to taxation and military service by converting their industrial undertakings into agricultural colonies.

The State thus suffered great loss without conferring any compensating advantages on agriculture, until, finally, in the budget law of 1892, a provision was made reforming the law of the 3rd July 1868, and suspending the power conferred on the Minister of Finance of granting exemption from duties and taxation, with regard to the erection of villages and the extension of municipalities. The Minister of Finance is further authorised to examine the cases in which concessions have been already granted with the object of annulling them, if due regard has not been paid to legal requirements.

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#### THE FRENCH NATIONAL DAIRY SCHOOL AT MAMIROLLE.

The mountainous region which extends from Belfort to the Mediterranean is the seat of an important cheese industry, and it was for this reason, as well as on account of the competition on the French market of similar produce from the adjacent countries, that a national dairy school was founded by the French Government at Mamirolle in the year 1888. This institution offers instruction which is intended for three different classes of learners. It is a dairy school, properly so called, where young apprentices receive sound, practical, and theoretical instruction in dairying. It is also a "continuation school," where, under certain conditions, persons may complete their studies. Finally, it comprises a "school of research," where certain experiments are made, and advice is given, regarding the adaptability of new dairy methods and machinery, and such

other matters as are connected generally with the production and utilisation of milk.

The extensive buildings of the Mamirolle Dairy School contain accommodation for instruction in the manufacture of butter; of Gruyère, Dutch, soft, and other cheeses; of milk-sugar; and for the sterilization of milk on a commercial scale. A farm of nearly  $7\frac{1}{2}$  acres, which is attached to the school, is intended to afford object lessons relating to the intensive production of milk. There is also a botanical garden containing such plants as bear any relation to dairying.

Students are admitted to the school at two periods of the year, viz., on the 1st April and on the 1st October. The students are divided into a certain number of groups, and each group in rotation attends for the period of two weeks to each of the various categories of practical work. Those who have passed through the whole curriculum may confine their attention to some particular work relating to the special branch of dairying which they intend to adopt on leaving the school. The teachers merely supervise the practical work which is done wholly by the pupils, of whom, for this reason, a limited number only (15 to 20) are received. A rule adopted in the method of instruction, which is found to be of much value, requires the students to give details in writing of the operations conducted by them, and to check their work theoretically.

Much care is also bestowed on instructing the pupils in the methods of controlling the quality of milk, of which about 165 gallons are received daily at the school from a number of farmers in the district. The practical work is done in the morning and evening, the afternoon being devoted to theoretical instruction.

No fees are charged at the school, but the pupils pay for their board and lodging, which can be obtained in the neighbourhood for about 2*l.* a month. A few scholarships, which are granted by the Government and by certain Departements, are awarded to meritorious candidates who have previously testified as to their insufficiency of means.

The staff of the Mamirolle School give free advice to the public on the various matters connected with dairying and dairy utensils. A considerable portion of this work is carried on by correspondence. The research laboratory, which was opened on the 1st January 1893, is intended for original work.

The possibility of producing Emmenthal and Gruyère cheese on a large scale in France, with milk collected over a wide area, has, been recently demonstrated at Mamirolle. Various other kinds of investigation are undertaken, and much useful work is said to have been done by the school as regards co-operation among the farmers for the manufacture and sale of their produce, as well as for the purchase of manures and feeding stuffs.

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## AGRICULTURAL RETURNS OF NEW ZEALAND FOR 1895-96.

In a recent number of the *New Zealand Farmer* attention is directed to the agricultural and stock returns for the colony, which have been published in a supplement to the *New Zealand Gazette*. The period covered by these returns is from February to December of last year. Comparing the tables given with those published in former years, it appears that the information has been collected under a far more elaborate system, which, if the particulars given are fairly accurate, makes the statistics for 1895-96 more valuable for purposes of reference. This year, also, endeavours have been made to obtain individual returns from the Maoris. The returns of stock apply to cities and boroughs as well as in country districts, so that, on the whole, it is believed that a more accurate record of actual facts as regards the country's farming and agricultural condition has been obtained than hitherto. As the tables are in a different form from those of other years comparative figures are not given; also as respects grain crops, only acreages are set down, and the number of bushels of grain on hand at the time the returns were compiled. The harvest returns of 1895-96 have since been estimated from the actual threshing yields of a few representative crops in each district, but these figures have not yet been published.

The acreage under corn crops for the whole colony sown or intended to be sown for the season 1895-96 was as follows:—

—	Wheat.	Oats.	Barley.	Rye.
	Acres.	Acres.	Acres.	Acres.
For threshing - - -	245,441	364,788	35,358	3,366
For other purposes - - -	4,213	171,556	1,859	3,093
Total - - -	249,654	536,344	37,217	6,459

The area of peas is set down at 7,323 acres, and of beans at 4,894 acres. There were less than 500 acres of vetches grown, and almost all of it for threshing, according to the official returns. Of linseed there was an area grown last year of 2,104 acres; the total area under hops was 352 acres. The area of other crops not enumerated was 2,812 acres.

With regard to grass, upon land previously ploughed, the area of sown pasture grasses was set down at 4,074,212 acres, of which 3,992,024 acres were used exclusively for grazing, 70,544 acres being cut for hay. The surface-sown grass lands, according to the returns, covered an area of 5,030,267 acres, making in all an aggregate area of sown grass lands of 9,104,479 acres, an increase, as compared with the previous returns, of 274,762 acres.

Besides this extent of pasture lands, 15,038,259 acres are entered as the area under native or indigenous grasses.

In root crops, turnips head the list with a total area for the colony of 391,558 acres, while 8,300 acres of mangolds were grown. Carrots were grown to the extent of 1,735 acres, and rape for green forage showed an acreage of 54,040 acres. The total area of orchards was estimated at 19,362 acres.

The number of sheep in the colony is estimated at 17,335,073 as against 19,826,604 on 30th April 1895, and 20,230,829 in 1894. This shows a decrease between April 30th and December of 1895 of no less than 2,491,531 sheep, for which the severity of last winter is said to be mainly responsible.

### FARM INDEBTEDNESS IN BAVARIA.

In October 1894 a Commission was appointed by the Bavarian Ministry of the Interior to inquire into the condition of farm lands, the mortgages upon them, and the general condition of the population affected, including their indebtedness other than that covered by mortgages, in 24 typical parishes in Bavaria. The labours of this Commission are now concluded, and the result of their inquiries has been published.\*

One of the main objects of the inquiry was to find (1) the amount of mortgage indebtedness, and (2) the amount of current indebtedness other than mortgage. With regard to the first point, it was found that the value of agricultural lands within the 24 parishes was 1,438,859*l.* and the total amount of mortgages entered in the public record of mortgages was 323,057*l.*, equal to about 22·45 per cent. of the total value. This percentage varied largely in the 24 districts; in one district it was 5·21 per cent., in eight districts 11·6 to 17·25 per cent., in eight districts 20·93 to 29·92 per cent., in six districts 34·78 to 39·72 per cent., and in one district 76·04 per cent.

The second important question—that of current indebtedness—was a much more difficult one than the first, since debts of this nature are easily concealed. The inquiry into the state of current debts was intended to include all loans and debts not officially acknowledged and recorded in the public mortgage book.

The total amount of such indebtedness was reported to be 105,434*l.*, or 7·33 per cent. of the total value of the farm lands. This amount would bring the indebtedness from both sources up to 29·78 per cent.

Mortgages and other debts have increased during the last 10 years, notably within the last three years, but this increase has

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\* Untersuchung der wirthschaftlichen Verhältnisse in 24 Gemeinden des Königreiches Bayern. München, 1895. Druck und Verlag von R. Oldenbourg.

not been especially rapid. The principal causes leading to the increase appear to have been purchase at too high a price, want of sufficient working capital, and various minor causes—for instance, early marriages were said to have exercised a detrimental influence in some districts.

The condition of these 24 districts having become worse during the last 10 years, it is assumed that the condition of the agricultural population of the kingdom has undergone a corresponding decline.

The population of Bavaria, according to the census of 1890, was 5,594,982; of this total, more than one-half (50·9 per cent.) were engaged in agricultural pursuits, including, it is presumed, forestry. The mortgage and other indebtedness would, therefore, appear to be 3·01 shillings per head of the agricultural population.

#### ACREAGE OF HOPS IN GREAT BRITAIN, 1896.

PRELIMINARY STATEMENT compiled from the Returns collected on the 4th June 1896, showing the ACREAGE under Hops in each COUNTY of ENGLAND in which Hops were grown, with a COMPARATIVE STATEMENT for the Years 1895, 1894, and 1893.

COUNTIES.	1896.	1895.	1894.	1893.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
BERKS - - - -	4	—	11	11
GLOUCESTER - - -	49	38	39	33
HANTS - - - -	2,494	2,875	2,911	2,795
HEREFORD - - - -	6,895	7,553	7,525	7,079
KENT - - - -	33,310	35,018	35,520	34,815
SALOP - - - -	140	150	140	123
SUFFOLK - - - -	7	10	17	21
SURREY - - - -	1,623	1,783	1,935	1,845
SUSSEX - - - -	5,927	7,489	7,589	7,326
WORCESTER - - -	3,800	4,024	3,848	3,516
Total - - - -	54,249	58,940	59,535	57,564



## FOREIGN OFFICE REPORTS.

## DANISH TRADE IN AGRICULTURAL PRODUCE.

Capt. James Boyle, Her Majesty's Consul at Copenhagen, states in his last annual report to the Foreign Office that the exports of agricultural produce from Denmark increased very considerably during 1895. In comparison with the average exports of the preceding five years there was not only an increase in horses, oxen, cows, pork, and butter, but also in sheep, meat, eggs, potatoes, and undressed hides. In horses and horned cattle, the augmentation amounted to 211,111*l.*, and in pork and butter to 672,222*l.* On these products Danish agriculture thus made 833,330*l.* more in 1895 than the average for the last five years. The greatest increase was in pork, but the increase in value did not correspond to the increase in quantity. Had the prices in 1895 been the same as in 1894, the increased export of pork would have realised about 433,330*l.*, whereas it only amounted to about 166,660*l.*, but the prices were so very low that the profits on this branch of agriculture almost entirely disappeared. As regards butter, the exports in 1895 were about the same as in 1894, *i.e.*, about 130,000,000 lbs. There is not the slightest doubt, however, that the exports of Danish butter increased by several million pounds weight, the apparent standstill is due to the fact that the transit trade in Finnish and Swedish butter was considerably lower in 1895, so that the quantity of Danish produce exported was really greater than in 1894.

The whole trade in cereals, taking the imports and exports together, was, according to the official statistics, 137,500,000 bushels less than 1894, although it was 343,200,000 bushels more than in 1893.

As usual, the principal exports to England consisted of dairy produce, bacon, and eggs. The exports of these articles, in 1895, were as follows:—Pork and bacon, 132,000,000 lbs.; butter, 129,800,000 lbs.; and eggs, 8,000,000 score.

According to information collected from various sources, it may be said that about 950,000 pigs were slaughtered in Denmark for bacon during 1895, showing an increase of 35 per cent. when compared with 1894. Considering the enormous number of pigs slaughtered, the results are stated to have been far from satisfactory, as the prices obtained were uncommonly low. In the report of the Danish Chamber of Commerce, farmers are advised to obtain a better breed of pig, and not to over-fatten them. At present there are 15 private and 18 co-operative slaughter and curing establishments in Denmark. It is worthy of remark that all the slaughtering establishments started in

1895 are said to have been built by private capital, while only one has been established on the co-operative system. From this it would appear that the co-operative system, at any rate, for the moment, is not progressing.

The inland consumption of margarine amounted to 19,597,079 lbs. in 1895, against 20,940,674 lbs. 1894, or a decrease of 1,343,595 lbs. This is said to be due principally to low prices in all articles of a fatty nature. The total imports amounted to 2,544,640 lbs., and the exports to 10,455 lbs. The Government has brought in a Bill for the renewal of the Margarine Law, which expired in March 1896.

The breeding of horses is reported to have been satisfactory. About 12,000 horses of all ages were exported. Some high-priced entire horses, bred in Jutland, were exported to Germany and Russia.

[*Foreign Office Report, Annual Series, No. 1755. Price 3d.*]

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#### SPANISH CUSTOMS SURTAXES ON FOREIGN WHEAT, &c.

The Board have received, through the Foreign Office, a copy of a despatch from Sir H. Drummond Wolff, Her Majesty's Ambassador at Madrid, containing the following translation of a decree which appeared in the *Madrid Gazette* of the 2nd July last, with reference to the Customs surtaxes on imports of foreign wheat, wheaten flour, and bran:—

Art. 1. The Customs surtaxes established by the law of February 9th, 1895, on foreign wheat, wheaten flour, and bran imported shall remain in force until June 30th, 1897.

Art. 2. The Government will, as soon as possible, lay a bill before the Cortes, fixing the Customs duty to be levied from that date on the aforesaid products.

Art. 3. Should the Cortes not have noted, or His Majesty sanctioned, the law referred to in the preceding article on the 30th of June 1897, the above-mentioned surtax shall continue to be levied until the promulgation of said law.

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#### CATTLE RAISING IN VENEZUELA.

In the annual report for 1895 on the trade of the Caracas Consular District, Mr. W. A. Andral observes that Venezuela, having immense plains adapted for cattle-raising, ought to be able to make this a source of public wealth, as has been the case in the Argentine Republic, but the stock raised is of inferior kind, and very little in excess of the demand for home consumption.

A great drawback to the expansion of this branch of industry is referred to in the fact that transport of cattle by the mountainous region of the coast is too difficult and expensive, while the other route by the great interior waterway of the Orinoco River is almost prohibitive, seeing that its navigation is a monopoly held by a company possessing but two steamers.

[*Foreign Office Report, Annual Series, No. 1730. Price 1d.*]

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#### DAIRYING IN THE STATE OF WASHINGTON.

In a report dated 29th April, 1896, Mr. Alexander, Her Majesty's Vice-Consul at Tacoma, states that dairying in the State of Washington is advancing rapidly to a position amongst the leading industries. The climate, on the whole, is adapted to this business, and each of the sections of the State is suited to it in its own peculiar way. The luxuriant growth of the clovers in Western Washington and the ease with which grasses are grown render that section eminently adapted to dairying, while the wonderful growth of alfalfa (lucerne) in Central Washington and the cheapness of grain make it possible to feed a dairy cow on an ideal ration for less than 5*d.* a day. In Eastern Washington the various root crops, especially carrots, mangolds, sugar-beets, ruta-bagas, and potatoes, are produced in great abundance. Cereals, also, grow there to perfection, but the one thing lacking, so far, is leguminous crops, without which no system of agriculture, and particularly dairying, can long be successful. There are said to be indications, however, that some of the less common leguminous crops such as sweet melilot and the hairy vetch may be grown advantageously, and it is hoped that others may be found to do equally well. Red clover thrives fairly in many places.

In the year 1895 there were 52 creameries and cheese factories in operation in the State, the daily output of which was 7,000 lbs. of butter and 2,400 lbs. of cheese, making an annual production of 2,190,000 lbs. of butter and 547,000 lbs. of cheese.

An Act was passed by the State Legislature in 1895 regulating the manufacture of dairy products and to prevent deception or fraud in the sale of the same or imitations thereof. It also provided that milk, in order to comply with the standard, should contain not less than 3 per cent. of pure butter fat, when subjected to chemical analysis; that all dairy herds should be free from disease; and further, that all dairy products should be stamped so as to show their exact nature. In the case of cheese, it was provided that there should be three grades, to be known as Washington full cream, skimmed, and half skimmed, respectively. The first grade to contain the whole portion of the butter fat and other solids, the second to be



made from pure skimmed milk, and the third to contain not less than 15 per cent. of pure butter fat. The sale of oleomargarine is not prohibited, provided it be in a separate package distinctly marked, so as to indicate clearly its real nature.

A dairy commissioner has been appointed to devote his entire time to the dairy interests of the State, especially to the enforcement of the laws relating to the manufacture and sale of dairy products. He is to make personal inspection of any articles believed to be impure or adulterated, and to prosecute the manufacturers of such articles. He has authority to call on the chemists of any State institution to furnish, without compensation, analyses of such articles as he may submit to them for analysis, as well as to enter any creameries, manufactories, or shops and to seize any articles which he may have reason to suspect of being adulterated. The prosecuting attorneys of the different counties are also required to render him any legal assistance he may require in carrying out his duties.

The State Agricultural College and Experiment Station, at Pullman, in Eastern Washington, is doing its share in addition to its other work, in encouraging the farmers to take a special interest in dairying, and with that object in view a model dairy school was to be opened early in 1896, where a course of lectures, as well as practical instruction, extending over two months, was to be given free of all charge to residents, both men and women, in the State in all phases of milk-testing, butter-making, cheese-making, and in the management of cows and of the machinery of the dairy, including both the theoretical and practical sides of the business. The institution is fully equipped for this purpose, having the most improved modern machinery and appliances, as well as a fine herd of selected dairy cattle.

[*Foreign Office Report, Annual Series, No. 1734. Price 3d.*]

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#### EXPORT OF AMERICAN PRODUCE BY THE GULF OF MEXICO.

The report for the year 1895 on the trade of the Consular District of Chicago contains some information relating to the increasing export trade from ports on the Gulf of Mexico, which are of importance to persons interested in the export of agricultural produce from the United States to this country.

Mr. P. E. Burrough, Her Majesty's Vice-Consul at Kansas city, points out that in addition to the shorter distance of the Gulf of Mexico from the grain fields of the west, the ports are never blocked by snow in winter, but vessels can always arrive and depart; while the eastern railroads are frequently snowbound, and the lakes and eastern ports frozen up in winter, thus delaying the exports. It is a down-hill grade from the Western States to the Gulf of Mexico ports, so that very large trains can be handled. The Kansas City, Pittsburg, and Gulf Railway

Company, it is rumoured, will shortly complete arrangements with a Dutch line of steamers to commence running from Port Arthur, Texas, their southern terminus, to Great Britain; the service to commence in the autumn of 1896.

It is thought that not only the exports of Kansas City and Omaha, but also those of towns as far north as Minneapolis and St. Paul, Minnesota, can be handled cheaper via the Gulf of Mexico than by the ports of the Atlantic coast. The four great grain-producing States tributary to Kansas City, in an average year produce 25 per cent. of the wheat, 40 per cent. of the corn, and over 30 per cent. of the oats grown in the United States; the States and territories tributary to Kansas City produce 40 per cent. of the cattle, 60 per cent. of the sheep of the United States, and more of the packing-house and livestock products of Kansas City are exported than of any other city in the United States except Chicago; so that the importance of the ports on the Gulf of Mexico to Kansas City and territory tributary can readily be seen. The six railways of Kansas City are now accepting and transporting extensive quantities of grain and grain products, and packing-house products from Kansas City to these ports for shipment to European and other markets, which formerly went by the Atlantic coast ports.

The growing export trade from the Gulf of Mexico is said to be a subject that is at this time causing considerable uneasiness to the grain merchants of St. Louis, Chicago, and the eastern markets. The low freight rates to Gulf ports by western and southern lines have diverted an immense amount of corn for export from central primary markets and eastern ports. As regards Chicago and eastern ports, however, there is, it appears, no likelihood that any change at all probable in the situation could restore to those markets their former interest in that portion of the western crops exported. The Gulf export business that was predicted for years has become a reality. It is the natural result of a business trend that long ago was inevitable to the people of the south and west, but it is even now hardly appreciated by the lake region and east coast markets.

[*Foreign Office Report, Annual Series, No. 1725. Price 7½d.*]

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#### CULTIVATION OF SAFFRON IN SPAIN.

In his last annual report to the Foreign Office, Mr. Alexander Finn, Her Majesty's Consul at Malaga, gives the following particulars regarding the cultivation of saffron in Spain:—

With the ground lightly prepared to a depth of 6 inches, the seed is planted about 3 inches deep in rows at  $\frac{1}{2}$  or  $\frac{3}{4}$  inch distance apart, leaving nearly 8 inches between each row. This operation is effected about August. The first year there is no

fruit ; the second year should give an abundant crop. The third year is generally as productive as the second, and both quality and quantity diminish in the following years. After the sixth year it is customary to renew the plantation.

There are two operations : one in summer, which consists in gentle hoeing in order to kill the weeds and turn the soil, and the other generally at the end of September or the commencement of October, a few days before moving the plant, which consists likewise in moving the soil with a special tool for the purpose.

Nearly all kinds of soil are suitable, but ground in which it is planted for the first time gives the better result, and the richer the soil the better the return, as saffron yields in proportion to the quality of the soil and cultivation expended on it.

The flower is picked as it comes out (from the middle of October to the beginning of November). It is taken indoors, and, after being stripped, is placed in sieves and submitted to a very slow fire until all moisture has disappeared.

In the market it is divided into the following classes : select, very superior, superior, ordinary superior, medium, Tobarra, Baja, Aragon (river), Aragon (land). These classes are subject to further differences with respect to past and present season.

The cost of seed varies in proportion to the price of the article itself, *i.e.*, if the 1 lb. (Castilian) is worth 8 dol. (say 24s.) the fanega of seed is computed to be worth 8 r. (say 1s. 4d.).

[*Foreign Office Report, Annual Series, No. 1753. Price 8½d.*]

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### THE CIDER INDUSTRY IN GERMANY.

The report of Sir Charles Oppenheimer, Her Majesty's Consul-General at Frankfort-on-Main, relating to the trade of his consular district in 1895, contains some observations upon the cider-making industry in Germany. It appears that for many years cider of excellent quality has been manufactured in Germany, especially at Frankfort-on-Main. In the south of Germany, with the exception of the wine-growing parts of Bavaria and the strictly grape districts, a great amount of cider is produced and consumed. The manufacture for the greater part is still carried on by inn-keepers as a rule from home-grown apples. Of late, also, corporations of producers or consumers have taken up the manufacture of cider. Whenever the home supply of apples does not suffice foreign apples are resorted to. An import of fruit for pressing is carried on almost constantly from Switzerland to Würtemberg, and apples are often imported from Austria-Hungary. In especially bad apple seasons, such as 1895, the import had to be more extensive in order to meet the demands. Belgium, Holland, and France were resorted to in 1895, and the Belgian, French, and Austrian



Governments have made cheap tariffs for the transport, and have also had the fresh fruit transported quickly as was required by the nature of the product.

The manufacture in most cases is still performed in a very simple manner. The apples are thoroughly washed, then mashed by small hand mills and left to ferment for a short period; afterwards they are pressed. For private consumption the cake is then mixed again with water and pressed. This cider which, as a rule, remains cloudy and has a milky yellowish colour, is much consumed in small villages, and also used as a house drink by peasants. The case is different with the manufacture in the well-known factories, which have their centre at Frankfort. These furnish a full clear product, which is well adapted for export. The export has of late increased a good deal in consequence of incessant endeavours.

Champagne cider is, it appears, much in demand on account, of its cheapness, and if of good quality is said to be only slightly inferior to the German sparkling wines.

The year 1894 was not satisfactory for cider manufacturers because their product must not exceed a certain limited price if the consumption is not to be greatly curtailed. In 1895 the conditions were even worse on account of the bad inland apple harvests, so that the export for the business year 1895 is not great. The Frankfort cider manufacturers consume, as a rule, fruit from the Wetterau, the Main Valley, Bavaria, Baden, and Hesse. They are of opinion that the good reputation of their product is connected with the good quality of this fruit.

*[Foreign Office Report, Annual Series, No. 1752. Price 3d.]*

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PARLIAMENTARY PUBLICATIONS.

*Board of Agriculture.—Report on the Distribution of Grants for Agricultural Education in Great Britain in the Financial Year, 1895–1896, with an Appendix. [C.—8228.] Price 9d.*

This volume contains Major Craigie's annual report to the President of the Board of Agriculture on the administration of the Parliamentary grant in aid of agricultural education in Great Britain, during the financial year ended 31st March 1896. Out of the funds entrusted to the Board of Agriculture for educational purposes, sums amounting to 7,850*l.* have been distributed in specific grants to the 18 institutions enumerated in the table appended, the balance being applied to the cost of inspecting the work of the collegiate bodies or societies applying for assistance, and to the inspection of the educational arrangements of certain county councils, undertaken at the request of those authorities.

The gradual concentration of the grants on fully equipped centres of agricultural instruction of a wider and more advanced type than could, as a rule, be provided for limited areas by individual county councils is shown by the following analysis of the distribution of the vote since it was first granted by Parliament in 1888–9:—

Financial Year.	General Agricultural Education under Collegiate Centres, including Dairying and Experiments.	Special and Provisional Grants.			Total in Great Britain.
		Instruction in Dairying at Special Institutes.	Local Schools and Classes.	Agricul- tural Experi- ments and Research.	
1888–89	£ 200	£ 1,025	£ 1,315	£ 390	£ 2,930
1889–90	400	1,800	1,725	660	4,585
1890–91	550	1,805	1,650	835	4,840
1891–92	2,400	1,935	1,335	1,035	6,705
1892–93	3,600	1,500	1,300	1,025	7,425
1893–94	4,450	1,025	900	725	7,100
1894–95	5,550	950	250	650	7,400
1895–96	6,100	900	300	550	7,850

Fully equipped centres were engaged in 1895–6 in supplying agricultural education for groups of contiguous counties in three cases in England, two in Wales, and two in Scotland. In three other instances in England, and one in Scotland, collegiate centres more recently organised, were in process of development for other groups of counties.

These centres provide organised indoor training for a certain, and necessarily, more or less limited number of students pursuing a continuous course of study for two or more consecutive years. They offer also, in accordance with the distinctive requirements of their districts, a variety of other and more temporary courses of instruction. The educational staff and machinery of the centres is also made available for the work of the surrounding county authorities, the educational services thus offered applying equally to all branches of technical instruction, including, as determined by local circumstances, special subjects such as forestry, horticulture, and dairying.

In two instances in England and one in Scotland, separate dairy institutes, established independently of departments of colleges, are also at work over areas embracing several counties, and special grants have been continued in these cases, in recognition of their services to the agriculturists of districts which have not yet been effectively reached by the collegiate centres.

In like manner special grants, noted in the last column of the table, have been continued to three agricultural societies engaged in experimental and research work of a different character from that carried on by collegiate centres acting for groups of counties or by the technical education committees of particular counties.

As on previous occasions, full summaries are appended to this Report showing the salient features of the work of each educational institute assisted by the Board during the past financial year.

The agricultural work of the following County Councils was, in accordance with their request, inspected in 1895-6:—Northumberland, Cumberland, Cheshire, Derbyshire, Essex, Berkshire, Hampshire, and Dorset, and, where desired by the local authorities, advice was supplied by the Board. The information thus collected, and that obtained by the inspection of the collegiate centres, has been supplemented by a renewed attempt to obtain by direct enquiry, and to summarise in one general statement, the chief heads of the educational work in which the various County Councils of Great Britain are engaged, so far as these are connected with agricultural instruction.

The series of notes based on the replies to this inquiry form the third section of the Appendix, and although, as pointed out, the information is still defective in many particulars, it affords an approximate view of the local efforts now being widely undertaken to make up for the conspicuous lack of educational facilities reported by the Departmental Committee of 1887-8.



The amount of the grants awarded to the several institutions aided by the Board in 1895-96 are shown below.

LIST OF GRANTS AWARDED 1895-96.

Institutions aided.	Work.	Grant 1895-6.
ENGLAND AND WALES.		
		£
University College of North Wales, Bangor -	Collegiate centre -	800
Yorkshire College, Leeds -	" " -	800
Durham College of Science, Newcastle-on-Tyne -	" " -	800
University College of Wales, Aberystwyth -	" " -	800
University Extension College, Reading -	" " -	700
University College, Nottingham -	" " -	450
Cambridge and Counties Agricultural Education Committee.	" " -	400
South-Eastern Agricultural College, Wye -	" " -	150
Eastern Counties Dairy Institute, Ipswich -	Dairy instruction -	300
British Dairy Farmers' Association -	" " -	300
Bath and West and Southern Counties Society -	Special cheese and cider research, and agricultural experi- ments.	350
SCOTLAND.		
Glasgow and West of Scotland Technical College	Collegiate centre -	650
University of Edinburgh -	" " -	550
University of Aberdeen -	Agricultural instruc- tion.	150
Scottish Dairy Institute, Kilmarnock -	Dairy instruction -	300
Highland and Agricultural Society -	Agricultural experi- ments.	100
Aberdeen Agricultural Research Association -	Agricultural experi- ments.	100
Royal Botanic Garden, Edinburgh -	Class for working foresters and gar- deners.	150

*Ordnance Survey Maps. Report of the Departmental Committee appointed by the Board of Agriculture to consider and report upon the arrangements which it is desirable to make for the Sale and Distribution of Ordnance Survey Maps.* [C.—8147.] Price 1½d.

*Minutes of Evidence taken before the above-mentioned Committee, with Appendices and Index.* [C.—8148.] Price 9d.

The Committee state that, in view of the objections to the present system of distribution of Ordnance maps, they do not hesitate to recommend that it should no longer be continued, and that the Ordnance Survey Department should again take over the control of the sales of the maps they produce. The Committee

propose that (1) direct communication with the offices at Southampton and Dublin should be allowed on the part of (a) a certain limited number of local agents, who would be appointed, on special terms, (b) local map sellers generally; (2) that the Government should retain for themselves full freedom to produce and publish maps in any form they think desirable, and to increase or lower the prices as they may consider proper; (3) that equal facilities should be afforded to the public for the purchase of maps in the cheap as in the expensive forms; (4) that reasonable facilities should be allowed for the exchange of maps wrongly ordered and for the withdrawal of obsolete maps; (5) that contracts with the agents for sale should be made direct with the Board of Agriculture; (6) that the proceeds from the sale should be appropriated in aid of the Survey Vote, so as to show more clearly the net cost of the survey to the country.

They further propose that a single agent should be appointed for the sale of maps in London and that an agent should be appointed for Edinburgh, Dublin, and each of the larger provincial towns. They also propose that any book or map seller should be allowed to order maps direct from Southampton or Dublin.

The Committee recommend further that the Postmaster-General should be invited to sanction arrangements for the exhibition of indexes, catalogues, and specimen sheets at a certain number of selected post offices; for the transmission of orders to Southampton; for the supply of explanatory pamphlets to postmasters; and for the exhibition of notices showing how the maps can be obtained.

The Committee make the following supplementary recommendations, viz.: That announcements of new issues should be furnished to mapsellers and individuals in the locality concerned, and that similar information should be supplied to the local newspapers; that advertisements of the maps should be inserted in all Government publications; that the official catalogues and indexes should be made more simple for the use of non-technical purchasers, and that separate indexes should be prepared for each scale of map; that handbills and notices should be prepared for distribution, showing where the maps can be obtained, and that a small explanatory memorandum should be prepared for gratuitous distribution, and that a larger one with more detailed information should be issued and sold at a price not exceeding 6d.; that the prices of the maps should be simplified and made more uniform, and that the charges for unfilled sheets and sheets with but little work should be reconsidered; that the charges for packing and postage should be simplified and reduced; and that maps should be supplied under discount to local authorities and the managers of elementary and public endowed schools.

The Committee are of opinion that the evidence which they received showed that there would be a considerable sale for a coloured edition of the 1-inch map; a thin paper edition of

the 1-inch map, arranged to fold in a case; combined maps, where the centre of interest ordinarily appears on the margin or corner of a sheet, on the lines of a few which have been already issued; and a small scale map for cyclists.

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*Board of Trade.—Second Annual Report on Changes in Wages and Hours of Labour in the United Kingdom, 1894.*  
[C.—8075.] Price 1s. 9d.

This volume, in treating of the changes of wages in various occupations, contains an account of the variations in agricultural wages during 1894. The method adopted for obtaining the data necessary for such an inquiry in the case of most employments could not be utilised in the case of agricultural wages, owing to the alterations not usually affecting simultaneously a whole district or a given number of workpeople, as is more often the case in mining and manufacturing industries, &c.

For the purpose of the present report far more extensive data have been collected, and the materials obtained are believed to be more comprehensive than have ever before been brought together. Applications have been addressed to the chairman of each district council in England and Wales, asking for the net cash weekly wages most usually paid to ordinary agricultural labourers, exclusive of all allowances, piecework earnings, &c., in January and June 1893, 1894, and 1895. Answers have been received from 598 of such districts out of a total of 662 in England and Wales. Of the 64 districts from which returns of wages have not been received, six are returned as urban localities, where practically no agricultural labour exists.

The number of male agricultural labourers in each district has been extracted from the rough sheets of the census of 1891, and it has been assumed, for the purpose of calculation, that when the predominant rate has been changed by a given amount in a district, all the male agricultural labourers in that district have had their wages changed by that amount. It is considered that such an assumption gives an approximately true result, although in certain districts, notably Cumberland and Yorkshire, it is believed that such an estimate may not be entirely satisfactory, because weekly labourers, upon whose wages the returns are based, are not in a majority in those counties. Thus at the hirings in these countries in 1894, wages showed a slight downward tendency compared with 1893. This it is thought is hardly sufficiently indicated by taking the rates of wages paid to the weekly labourers.

Upon the above assumptions, however, which are considered to give, on the whole, the most reliable estimate, the following



table exhibits the main features of the changes in the course of the year :—

District.	Number of Labourers whose Wages were changed.	Net Gain or Loss in Weekly Wages throughout the Year.	
		Per Head.	Total.
		<i>s. d.</i>	£
Northern Counties - - - - -	2,151	+ 0 3	+ 26
Yorkshire, Lancashire, and Cheshire - -	2,860	- 0 5 $\frac{3}{4}$	- 69
Midland and Eastern Counties - -	101,083	- 0 5 $\frac{1}{4}$	- 2,215
Southern and Western Counties - -	20,087	- 0 6 $\frac{1}{2}$	- 542
Wales - - - - -	3,300	+ 0 7	+ 95
England and Wales - - -	129,481	- 0 5	- 2,705

It will be seen that there was a small rise of wages in the northern counties and in Wales, and a small fall in Yorkshire, Lancashire, and Cheshire. This is attributed to the agricultural depression having been felt less severely in the north; and, in the manufacturing districts, to the migration of labour to the towns, which would prevent wages from falling, or to the opening of new works and quarries. Where the depression has been more severe, or roughly speaking, south of the Humber, there has been a considerable decline in wages, especially in the corn-growing counties of Norfolk, Suffolk, Essex, and Cambridge.

The great centres of changes in agricultural wages were in the Eastern and Midland counties, including the principal corn-growing districts, in which no fewer than 101,083 labourers (out of a total of 379,424) were in districts where wages changed during the year. Of these, 85,686 sustained a fall, and 15,397 obtained a rise, the net effect being a fall of 2,215*l.* in weekly wages. Thus these counties account for over three quarters of the entire fall of wages recorded in the whole of England and Wales. The principal fall in wages has taken place in the corn-growing counties of Norfolk, Suffolk, Essex, and Cambridge, where 53,954 labourers were in districts in which wages decreased during the year, the net effect of all the changes in these counties being a fall of 1,434*l.* per week. The increase in the wages of 7,146 labourers in these districts was confined to three poor law unions. In one of these market-gardening is carried on extensively.

In several districts in the Midland counties where the rate of wages has been maintained, this is said to be due to the existence of boot and shoe or hosiery industries in the villages, and also in some cases to the extension of railway lines, or the opening of granite quarries, lime and cement works, &c.

It should be added that it is not infrequently reported, more particularly in the Eastern and Midland counties, that there has been a tendency for farmers to reduce the number of men

employed, and in some cases to give less regular work rather than to reduce the rate of wages. No doubt the conversion of arable land to grass has in a number of districts caused a reduction in the number of labourers employed, while in some districts there is evidence that the land is being worse farmed than formerly, owing to a curtailment of labour. In 1894 irregularity of work was chiefly confined to the Eastern and Midland counties, which have been most affected by agricultural depression.

Considering separately summer and winter wages, it is stated that summer rates changed in districts containing 70,753 labourers, and winter rates in districts containing 80,880. In the case of 22,152 of these labourers, both summer and winter wages changed. In districts containing 9,354 labourers, the change in the summer rate was a rise (a fall being recorded for the other 61,399 labourers); while 16,603 labourers were in districts affected by a rise in winter rates, the districts where wages fell containing 64,277 labourers. In six of the cases (affecting 10,784 labourers) of an increase in winter wages in 1894 compared with 1893, there had been a fall of at least an equal amount in 1893, doubtless owing, in a great measure, to the scarcity of work in consequence of drought in the summer of that year.

As regards Wales, there are stated to be circumstances indicating that there was possibly a greater rise in the wages than is shown by the figures quoted in the table above.

In Scotland, where the farm servants are nearly all hired yearly or half-yearly, there have been no changes of sufficient importance to make a material difference in the wages of any particular class.

From Ireland, wages of agricultural labourers have been obtained from every poor law union for 1895, and it is stated that, speaking generally, there has been no change since 1892.

The Board of Trade had received no information as to any changes in hours of labour.

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*Report from the Select Committee on Food Products Adulteration, with the Proceedings of the Committee. [H.C.—288.] Price 9d.*

This is the Report of the Select Committee originally appointed in the year 1894 to inquire into the working of the Margarine Act, 1887, and the Sale of Food and Drugs Act, 1875, and any Acts amending the same, and report whether any, and, if so, what, amendments of the law relating to adulteration are in their opinion desirable. The Commission met in all on 33 occasions, and examined 68 separate witnesses.

The following is a summary of their principal recommendations :—

1. That in districts other than county boroughs, where the local authorities fail to put the Acts in force, the county council should, by their own officers, take samples for the purposes of the Acts.

2. That in connexion with the sale of mixed articles it should be obligatory upon the vendor to supply the purchaser with a label setting forth that the article is mixed.

3. That the statement of admixture on labels should be legibly and distinctly printed and so as not to be obscured by other printed matter, and that existing labels should be subject to the proviso mentioned in the concluding paragraph of the section of the Report headed "Labelling and sale of mixed articles."

4. That, subject to the limitations indicated in the Report, invoices and equivalent documents should have the force of warranties in the cases of all articles to which the Sale of Food and Drugs Acts apply.

5. That the Commissioners of Customs be authorised to examine and take samples of all food imports at the port of entry with a view to subsequent action, as indicated in the body of the Report.

6. That dealers who obtain supplies of foods from abroad should be required to submit to the Customs guarantees of purity given by the foreign vendor, together with evidence that they have taken measures to see that the goods are such as they are guaranteed to be.

7. That retailers should be empowered to refuse to sell an article otherwise than in a manufacturer's unopened labelled tin or packet.

8. That the powers of section 3 of the Sale of Food and Drugs Act Amendment Act, 1879, as to the taking of samples of milk in transit, should be extended to other articles.

9. That the maximum penalty for refusal to sell a sample to the authorised officer be increased.

10. That the division of the sample after purchase and delivery of a portion to the vendor should be compulsory.

11. That samples should be divided into four instead of three parts, and that one of these parts should be at the disposal of the wholesale dealer.

12. That the provisions of section 5 of the Margarine Act, 1887, as to the exemption of an employer from penalty in certain cases, and punishment of an assistant, should be extended to offences under the Sale of Food and Drugs Acts.

13. That it should be obligatory upon the magistrates or court to refer articles to the Government Laboratory for analysis when such course is desired by either of the parties to the case.

14. That a defendant who proposes to rely upon the warranty defence should be required to intimate this to



the prosecutor within a reasonable time of the service of the summons.

15. That the time allowed for appeal to quarter sessions from decisions of local justices should be extended from three to fourteen days.

16. That any person guilty of a second offence under the Sale of Food and Drugs Acts should be liable to a minimum penalty of 5*l.*, and that in respect of the third or subsequent offences under those Acts and the Margarine Act, 1887, the punishment of imprisonment without the option of a fine may be inflicted at the discretion of the magistrates or court.

17. That magistrates should be authorised to make orders, at their discretion, requiring a person convicted of offences under the Acts to publish a notification of his conviction in the public press of the locality where the offence occurred.

18. That the definition of the word "food" as used in the Acts should be amended so as to include expressly all articles intended to enter into or be used in the preparation or flavouring of food.

19. That an authority should be constituted who should act as a court of reference upon scientific and other questions arising under the Acts, and who should be empowered, at their discretion, to prescribe standards and limits of the quality and purity of food.

20. That candidates for appointment as public analysts should be required to produce evidence that they possess the requisite knowledge of analytical chemistry, in the shape of a diploma or certificate given in respect of such knowledge by a recognised school of chemistry, or scientific examining body, and that in the case of candidates other than duly registered medical practitioners specific tests of the requisite knowledge of microscopy and the bearing of adulterations upon health should be prescribed.

21. That the remuneration proposed to be given to a public analyst should be subject to the approval of the central authority.

22. That the artificial colouring of margarine to resemble or imitate butter be prohibited.

23. That the mixing for sale of margarine and butter be prohibited.

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*Report from the Select Committee on Traction Engines on Roads.* [H.C.—272.] Price 2½*d.*

*Do., with the Proceedings of the Committee, Minutes of Evidence, Appendix, and Index.* [H.C.—272.] Price 2*s.* 9*d.*

This report, which was issued on the 1st July 1896, states that the Committee have inquired into the working of the laws relating to the use of traction engines on roads, and have taken

evidence on the subject from 39 witnesses, including owners and users of locomotives, representatives of the Local Government Board, chairmen of county councils and road committees of counties and boroughs in England and Scotland, and county and borough surveyors in England, Scotland, and Ireland. They have also received valuable memoranda and statistics from the English Local Government Board, the Scotch and Irish offices, the County Councils and Municipal Corporations' Associations, and various local authorities, officials, and other persons interested in the subject.

The Committee have considered themselves precluded by their reference from considering the user on roads of light locomotives or steam or horseless carriages. This matter is now otherwise under the consideration of Parliament, and would seem to require somewhat different treatment from the user of heavy locomotives or traction engines.

The recommendations of the Committee are as follows :—

- I.—That the limit of speed be maintained at four miles an hour in the country, but be raised from two to three miles an hour in towns and villages.
- II.—That engines be authorised to be used with driving wheels of any form of construction that may be from time to time approved by the Local Government Board.
- III.—(a.) That in addition to the two men in charge of an engine in motion, a third man should be required to accompany it, not necessarily in advance or on foot, but in such a manner as to be best able to assist horses passing either from the front or from the rear.
- (b.) That the fourth attendant be dispensed with in the case of trains consisting of three waggons or less.
- (c.) That in the case of two plough engines with their necessary gear closely following each other, only five men should be required in attendance.
- (d.) That one of the three attendants be required to remain with an engine while stationary on a highway, and having its fires alight.
- (e.) That at night every engine or train of waggons should carry a conspicuous red light in the rear, and that all lights should be fitted with shutters or screens.
- IV.—(a.) That a penalty not exceeding 10*l.* be recoverable summarily for carrying weights on waggons in excess of those authorised by 24 & 25 Vict. c. 70. s. 4, without the consent of the county or county borough surveyor.
- (b.) That a similar penalty be recoverable for drawing without such consent a number of loaded

waggon exceeding three, exclusive of a water-barrel.

V.—(a.) That local authorities should have no general powers of prohibiting the use of engines for specified hours within their county or county borough as a whole.

(b.) That local authorities should retain their present powers of making byelaws to regulate the use of engines upon any highway, and should also have power by byelaw (subject to confirmation by the Local Government Board) to prohibit their use in crowded streets, or narrow roads, or in special localities for special reasons: And that in confirming such byelaws the Local Government Board should have all proper regard to the necessities of through traffic.

VI.—That in all cases where a bridge is closed against traction-engine traffic by order of a local authority, an appeal should lie to an arbitrator appointed by the Local Government Board.

VII.—(a.) That a uniform annual licence duty of 10*l.* be paid by the owner (or user) of each engine of not more than 10 tons in weight, exclusive of water and coals, with an addition of 2*l.* per ton for every extra ton.

(b.) That a licence may be transferred from one engine to another belonging to the same owner with the consent of the licensing authority.

(c.) That the county or county borough council receiving the duty be required to provide a licence plate with the name of the county or borough, the number and date to be fixed to the engine, and not to be removed during the year without the consent of the licensing authority.

(d.) That every engine so licensed be authorised to pass through any other county or county borough on payment of an annual registration duty of 2*s.* 6*d.* for each county or county borough.

(e.) That steam-rollers (as well as agricultural engines) be exempt from licence duty, but that all engines be required to be registered at a nominal fee with the county authority, and to carry a registered number.

(f.) That the expression “agricultural engine,” should include any engine used solely for threshing, ploughing, or other agricultural purpose, and any engine the property of one or more occupiers or owners of agricultural land, employed solely for the purposes of their farms or estates, and not let out for hire.



- (g.) That similar licence duties be levied in Scotland and Ireland.

VIII.—That the extraordinary traffic clause (41 & 42 Vict. c. 77. s. 23) should be amended as follows:—

- (a.) The time for the recovery of expenses to be limited to a period of 12 months from the damage complained of, or (in case of a particular contract or building job) of six months from the termination of the work.
- (b.) The expenses to be recoverable from any person by whose order “or for whose benefit” the work is done.
- (c.) The expenses not to be recovered before justices, but in the county court, or, in case of large amounts, in the High Court.

In Scotland an appeal should be allowed from the Sheriff's Court to the Court of Session, in order to secure uniformity in the decisions.

The clause should be extended to Ireland.

- IX.—That the amount of the penalties for various offences should be revised, and that the law as amended should be consolidated in one Statute for the United Kingdom.

*India.—Statement exhibiting the Moral and Material Progress and Condition of India during 1894–95. [H.C.—218.] Price 1s. 9d.*

The statistics for 1893–94 which are contained in the above work, showing the area available for cultivation in British India, and the extent of cultivation of each kind of crop, are given below. They are incomplete in so far as they exclude from consideration large tracts, chiefly in the zemindari districts of Madras, for which no returns exist. The area thus excluded from consideration amounts to more than one-ninth of the whole area of India. In the rest of British India the cultivated area in 1893–94 was 197,000,000 acres, and the area of culturable waste other than fallow land was 95,000,000 acres; of the cultivated area, 28,000,000 acres bore two or more crops in the year. The area under food-crops was 186,000,000 acres, and under non-food crops, including sugar, tea, coffee, and condiments, was 39,000,000 acres. In these figures the area that bore more than one crop during the year has been counted twice over.

The exports of the chief articles of agricultural produce during the years 1893-94 and 1894-95 were as follows :—

						1893-94.	1894-95.
						Tons.	Tons.
Wheat	-	-	-	-	-	608,000	345,000
Oil seeds	-	-	-	-	-	1,211,000	1,045,000
Rice	-	-	-	-	-	1,233,000	1,686,000
Raw cotton	-	-	-	-	-	239,450	169,350
Tea	-	-	-	-	-	56,450	57,590
Coffee	-	-	-	-	-	13,950	13,650
Raw jute	-	-	-	-	-	434,550	648,800

The cultivated wheat area in 1894-95 was 26,032,000 acres as compared with 26,774,000 acres in the preceding period 1893-94. The average area in recent years has been 25,884,000 acres.

*Scotland.—Report by the Crofters' Commission for the Year 1895. [C.—8044.] Price 1s. 3d.*

This report contains an account of the proceedings of the Commission during 1895, together with tables showing the fair rents fixed and the arrears dealt with. The total number of holdings dealt with during the year was 460, situate in the counties of Argyll, Inverness, Sutherland, Caithness and Orkney, and the average fair rent of each holding amounted to 4*l.* 0*s.* 8½*d.* Copies of the Special Orders made by the Commissioners are also contained in the report.

*Ireland.—Return in pursuance of the Provisions of the 50th Section of the Diseases of Animals Act, 1894, for the Year ended 31st December 1895. [C.—8046.] Price 11½*d.**

This report states that no cattle plague, pleuro-pneumonia, or foot and mouth disease existed in Ireland during 1895.

With regard to swine fever, 8,903 suspected outbreaks were reported, and in 3,045 instances the outbreak was confirmed, a result which contrasts favourably with that for the year 1894, when there were no less than 7,619 confirmed outbreaks. In these cases 8,680 swine were slaughtered, 4,891 of which were diseased.

Four outbreaks of anthrax and five of glanders, including farcy, were reported, and 4,899 cases of sheep-scab are stated to have occurred.

The number of animals reported to have been affected with rabies was 771, of which 567 were dogs, and although there is reason to doubt whether the disease in all these cases was actually rabies, the evidence available tends to show that the

disease prevails to a considerable extent in Ireland. Muzzling regulations are now in force in about 80 poor law unions.

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*Scotland.—Report of the Committee of Council on Education for the year 1895-6. [C.—8070.] Price 3d.*

This report states that there were 692,202 children on the registers of the inspected schools. Examinations were held in the principles of agriculture under Art. 21 of the Code of the Scotch Education Department. Of 2,488 pupils who were examined in the first stage of this subject 2,128 passed, in the second stage there were 1,686 passes out of 1,909, and 729 out of 834 in the third stage, the total number of passes being 4,543 out of 5,231 presentations; this is a slight decrease on the previous year, when out of a total of 5,696 candidates 4,966 were successful. Instruction was also given in the Evening Continuation Schools to men and boys in agriculture and horticulture.

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*Report of the Committee of Council on Education (England and Wales), 1895-96. [C.—8248.] Price 3½d.*

The number of scholars on the registers in 1895 was 5,299,469, and the average attendance was 4,325,030. The amount expended in 1895 in annual grants out of the Parliamentary vote amounted in the case of day schools to 4,081,281*l.*, while the grant to evening continuation schools amounted to 112,084*l.*

The teaching of dairy work had been taken up by only one evening continuation school. No grant for dairy work under Article 101 (*i*) of the Code was paid during the past year.

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*Reports from Her Majesty's Consular Officers in certain European States respecting the Prices of Cereals and of Bread. [C.—8107.] Price 7½d.*

This publication of the Foreign Office is a Return to an Address of the House of Lords, moved for by Lord Stanley of Alderley, giving the prices of cereals, flour, and bread in 36 towns of Austria-Hungary, Belgium, France, Germany, and Holland during the month of July 1895. The prices for which particulars are given are those of wheat, rye, barley, oats, and maize, wheat flour and rye flour, and also of wheaten bread and rye bread. From the data furnished by each consul, summary tables, in which the prices have all been reduced to English measures and currency, have been prepared by the Board of Agriculture and prefixed to the section of the return giving the reports of individual consuls. To further facilitate comparison the customs duties levied on the commodities referred to in each country have also been added.

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# IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE IN THE SIX MONTHS ENDED JUNE 30TH, 1895 AND 1896.

## IMPORTS AND EXPORTS OF LIVE ANIMALS.

The imports of cattle into the United Kingdom in the first six months of this year were more than 100,000 head over those received in the corresponding period of 1895, while the imports of sheep were maintained at about the same level as last year. Significant changes occurred, however, in the exporting countries. The supplies of cattle and sheep from these countries are separately shown in the table below, which has been compiled from weekly returns furnished by the Board of Customs.

One pig was imported in the first half of the current year, and in the corresponding period of 1895 the imports amounted to 189 head, of which 128 were from Canada, 59 from the United States, and 2 from Argentina.

Countries from which exported.	Cattle.		Sheep.	
	Six Months ended June 29th 1895.	Six Months ended June 30th, 1896.	Six Months ended June 29th, 1895.	Six Months ended June 30th, 1896.
	No.	No.	No.	No.
Channel Islands - - -	848	849	—	—
Norway - - - - -	104	30	—	—
Argentina - - - -	16,622	44,500	183,703	224,413
Australia :				
New South Wales - - -	173	—	—	—
Queensland - - - -	114	32	—	—
South Australia - - -	—	—	210	518
Canada - - - - -	24,654	26,007	9,787	14,514
Chili - - - - -	—	—	85	897
New Zealand - - - -	—	—	523	—
United States - - - -	131,336	215,575	248,342	200,644
Uruguay - - - - -	—	292	—	2,468
Total - - - - -	173,851	287,285	442,650	443,454

The greater number of the cattle came as usual from the United States, whence the supplies exceeded the large imports of the first half of 1894, and they were greater by 64 per cent. than in the like months of last year. The most noteworthy feature was, however, the great increase in the arrivals of cattle from Argentina, the number received in the six months ended

30th June last considerably exceeding the whole imports of the previous 12 months, which amounted to 38,763 head. The same country has also largely added to its exports of sheep, taking the first place on the list of exporting countries, the supplies from the United States being 48,000 head behind last year's figures.

The exports of cattle, sheep, and swine of British and Irish origin during the first half of 1895 and 1896 are shown in the following table:—

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	No.	No.	£	£
Cattle - - - -	1,987	1,748	35,636	36,526
Sheep and lambs - - -	1,511	2,716	19,233	28,871
Swine - - - -	1,580	165	6,605	1,419

#### IMPORTS OF DEAD MEAT.

The imports of fresh meat in the first half of the current year exceeded by over 400,000 cwts. the quantity imported in the corresponding period of 1895, the increase being due to larger entries of fresh beef, mutton, and rabbits; but there was some falling off in the receipts of pork.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
Beef, fresh - - - -	1,038,512	1,236,844	2,057,064	2,354,764
Mutton „ - - - -	1,306,136	1,547,835	2,325,784	2,540,281
Pork „ - - - -	125,858	113,409	284,169	259,684
Rabbits - - - -	43,333	58,840	112,226	139,120
Total - - - -	2,513,889	2,956,928	4,779,243	5,293,849

The greater part of the increased importation of fresh beef was credited to the United States, whence the quantity received during the first six months of the present year amounted to

1,005,344 cwts., as against 841,000 and 914,000 cwts. in the corresponding periods of 1895 and 1894 respectively.

The increase in the importation of fresh mutton was due almost entirely to the heavier consignments from Australasia and Argentina. From the former we received 1,067,290 cwts., compared with 886,748 cwts. in the first half of 1895 while the quantity of Argentine mutton entered amounted to 411,143 cwts. or nearly 72,000 cwts. more than in the corresponding six months of last year.

The imports of salted beef in the first half of 1896 recovered their drop of last year and were about 29,000 cwts. in excess of the receipts of 1895. The increase came from the United States, whence the shipments amounted to 127,735 cwts. as against 98,494 cwts. last year.

There was a marked development in the imports of Canadian bacon, which amounted to 128,000 cwts., while in the periods to the 30th June 1895 and 1894 the consignments from Canada weighed 50,000 cwts. and 54,000 cwts. respectively.

An augmentation was also recorded in the receipts of bacon from Denmark, the imports having been 619,000 cwts., in the first half of the present year, and 452,000 cwts., and 393,000 cwts. in the corresponding periods of 1895 and 1894 respectively. The importation of hams from Canada and the United States has increased in recent years: 58,000 cwts. of Canadian hams entered this country during the period under review as against 16,000 cwts. and 12,000 cwts. during the similar periods in 1895 and 1894; while the weight of hams received from the United States was 623,000 cwts. in the first six months of this year, compared with 594,000 cwts. and 538,000 cwts. in the first six months of 1895 and 1894. The details of this group of imports were as under:—

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
Salted beef - - -	100,926	129,821	132,461	164,926
„ pork (not hams) - -	109,435	131,427	148,939	158,045
Bacon - - -	2,030,249	2,175,631	3,821,890	3,711,600
Hams - - -	611,130	683,300	1,337,134	1,421,146
Meat, preserved otherwise than by salting.	355,705	352,376	883,170	873,736
Meat, unenumerated, salted or fresh.	141,189	150,665	293,240	299,971
Total - - -	3,348,634	3,623,220	6,616,834	6,629,424



## IMPORTS OF DAIRY PRODUCE AND LARD.

The quantities and values of the imports of dairy produce and lard in the half year are shown below.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
Butter - - - -	1,456,690	1,554,974	7,243,861	7,883,613
Margarine - - -	448,187	448,486	1,228,385	1,220,576
Cheese - - - -	765,355	771,964	1,790,041	1,720,085
Lard - - - - -	906,128	903,850	1,588,582	1,292,263
Condensed milk -	262,025	285,195	524,293	549,092
	Gallons.	Gallons.		
Fresh milk and cream - - - -	117,353	5,011	17,910	1,127
	Great hundreds.	Great hundreds.		
Eggs - - - - -	5,963,357	6,240,032	1,860,410	1,992,829

The half-yearly figures are in striking contrast as regards the importation of fresh milk and cream. The Dutch supply, which originally attracted notice, as well as the Swedish, which was the special feature of the early months of 1895, has shrunk to small dimensions, only 340 gallons having been imported from Holland in the first six months of the present year against 12,596 gallons in the first half of 1895, while the Swedish import decreased from 104,598 gallons to 3,183 gallons in the same period. The small Danish trade has increased, 1,462 gallons having been imported from this source in 1896. The declared value given in the Returns shows an average of 4s. 6d. per gallon against an average value per gallon of 3s. 0½d. in 1895 and 1s. 1d. in 1894. From this it would appear that the importation now consists almost entirely of cream.

*Butter.*

The following table shows the principal sources of supply of the butter imported into this country. From this it will be seen that the imports from each country, with the exception of Australasia, were in excess of those of the first six months of 1895. In the case of Australasia, there was a drop of nearly 100,000 cwts. in the imports from the four colonies which export butter to this country, viz.: New South Wales, Victoria, South Australia, and New Zealand.

The principal countries contributing to the total included under "other countries" are Russia, United States, and the Argentine Republic. The quantity of butter imported from Russia in the first six months of 1896 was 82,535 cwts. against 68,595

cwts. in the same period of the previous year. The trade with the Argentine Republic, which was practically non-existent in the early part of 1895, amounted to 10,235 cwts in the first six months of 1896. The importation from the United States also showed a great increase, 39,461 cwts. having been received from this source in the period under review against 5,760 cwts. in the first half of the preceding year.

The average value of the butter imported from all sources in the first six months of 1896 was 5*l.* 1*s.* 5*d.* per cwt., or about 2*s.* per cwt. more than in the same period of the previous year.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
From Denmark -	582,896	656,849	2,897,916	3,324,840
„ France -	215,618	227,616	1,163,311	1,231,145
„ Australasia -	241,665	145,115	1,076,559	715,260
„ Sweden -	152,031	166,381	816,233	871,370
„ Holland -	84,567	100,211	405,609	489,656
„ Germany -	77,710	86,385	387,857	427,383
„ other countries -	102,203	172,417	496,376	823,959
Total -	1,456,690	1,554,974	7,243,861	7,883,613

### *Cheese.*

The quantity of cheese received from abroad during the first half of 1896 was only slightly in excess of the imports of the first half of 1895. The total importation in the corresponding period of 1894 was 747,196 cwts. While the total quantity imported has increased, the declared value has declined from 1,878,834*l.* in 1894 to 1,720,085 in 1896, or from an average of 50*s.* 3*d.* per cwt. to 44*s.* 7*d.* per cwt.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
From United States -	331,863	346,332	754,288	731,987
„ Canada -	168,615	207,061	359,799	442,337
„ Holland -	140,083	122,784	357,701	315,017
„ other countries -	124,794	95,787	318,253	230,744
Total -	765,355	771,964	1,790,041	1,720,085

*Eggs.*

The imports of eggs in the first six months of 1896 showed an increase of 280,000 great hundreds over those of the corresponding period of 1895. There was a decrease of over 400,000 great hundreds in the receipts of German eggs, compared with the consignments from this source in the first half of 1895, but this decline was more than counterbalanced by an augmentation of 500,000 great hundreds in the imports of French eggs. The increase of 220,000 great hundreds in the entries of eggs from Denmark is noteworthy in view of the efforts being made in that country to develop the export trade in eggs.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Great Hundreds.	Great Hundreds.	£	£
From Germany - - -	1,718,600	1,286,390	464,228	348,658
„ Belgium - - -	1,182,080	1,190,267	359,489	368,516
„ France - - -	1,486,020	1,985,327	585,426	772,642
„ Russia - - -	961,425	904,891	244,318	219,209
„ Denmark - - -	442,796	665,678	144,899	216,988
„ other countries - -	172,436	207,479	62,050	66,816
Total - - -	5,363,357	6,240,032	1,860,410	1,992,829

## IMPORTS AND EXPORTS OF HORSES.

The increase in the imports and exports of horses, to which attention was called in the March number of this Journal, has been maintained. As regards the imports, which are shown below, the United States is the principal source of supply, and the number imported has largely increased since 1894. In the first half of 1894 only 2,930 horses were entered from that country, whereas in the corresponding period of this year the entries represented a total of 12,326 head.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	No.	No.	£	£
From United States - - -	7,111	12,326	234,947	357,642
„ Canada - - -	2,998	4,288	87,314	110,812
„ other countries - - -	4,706	5,250	117,013	97,842
Total - - -	14,815	21,864	439,274	566,296



The number of horses exported from this country has also increased. Their destination is shown in the following table, where the number consigned to Belgium during the first six months of the present year appears as 6,689 as compared with 3,818, and 2,934 in the corresponding periods of 1895 and 1894 respectively.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	No.	No.	£	£
To Holland - - -	2,607	3,192	36,426	37,140
„ Belgium - - -	3,818	6,689	71,350	105,492
„ France - - -	1,978	1,756	98,591	96,651
„ other countries - -	860	1,572	47,808	76,755
Total - - -	9,263	13,209	254,175	316,038

# IMPORTS OF HAY AND STRAW.

The following table shows the supplies of hay and straw which reached this country from abroad during the first six months of 1896 and 1895 :—

Countries.	Hay.		Straw.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Tons.	Tons.	Tons.	Tons.
Algeria - - -	4,189	2,508	—	—
Argentina - - -	772	1,126	306	—
Belgium - - -	162	5,306	117	2,040
Canada - - -	4,813	1,112	—	—
Denmark - - -	423	1,329	936	975
France - - -	5,340	10,979	14,326	28,569
Germany - - -	249	6,288	584	2,137
Holland - - -	3,985	15,635	2,139	4,441
Italy - - -	—	141	133	—
Norway - - -	339	2,598	11	6
Russia - - -	90	190	—	—
United States - -	22,680	1,698	4	22
Other countries - -	28	139	—	—
Total - - -	43,070	49,049	18,556	38,190

The imports of hay have materially shrunk from the dimensions reached in 1894, when the quantity imported in the first six months amounted to 184,735 tons. It is noteworthy that the distant sources of supply, such as the United States, Russia, and Canada, have nearly ceased exporting to us. Holland, France, Germany, and Belgium now contribute the bulk of these imports.

The increase of nearly 20,000 tons in the imports of straw is largely accounted for by heavier consignments of this article from France.

### IMPORTS OF GRAIN AND FLOUR.

As regards the foreign supply of grain and flour, it will be seen from the following table that the imports of wheat in the first six months of the current year were about 15 per cent. short of the supply received in the corresponding period of 1895; and they were slightly above the quantity imported in the first half of 1894, viz., 32,173,000 cwts.

Beans show a decided decrease, the quantity received being less than for any corresponding period for the last eight years. The imports of maize exceeded those of the first half of 1895 by nearly 9,000,000 cwts., and were nearly 2,000,000 cwts. in excess of the large imports of the first six months of 1894.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
Wheat - - -	39,019,905	33,360,790	10,674,148	9,849,912
Wheat meal and flour -	9,158,580	10,138,090	3,752,658	4,257,967
Barley - - -	9,212,817	8,725,510	2,131,104	2,191,819
Oats - - -	7,312,900	6,606,800	1,754,217	1,549,321
Peas - - -	993,481	1,097,740	275,611	297,819
Beans - - -	2,032,758	1,451,280	523,359	376,563
Maize - - -	13,822,410	22,701,440	3,409,995	4,243,766
Other kinds of corn and meal.	—	—	292,062	369,337
Total - - -	—	—	22,813,154	23,136,504

### *Wheat and Wheat Meal and Flour.*

The principal countries from which the supplies of wheat, and wheat meal and flour were drawn in the six months under

review are shown in the following table, together with the amount imported from each :—

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
Wheat :—	Cwts.	Cwts.	£	£
From United States -	14,634,420	15,415,500	4,145,821	4,668,033
„ Russia -	10,499,535	9,174,000	2,673,974	2,623,793
„ Argentina -	6,634,860	3,168,300	1,852,505	944,453
„ British India -	2,887,900	1,187,400	761,508	342,837
„ other countries	4,313,190	4,415,590	1,240,340	1,270,796
Wheat meal and flour :—				
From United States -	7,644,030	8,010,400	3,070,516	3,309,468
„ Austrian Territory.	650,260	680,700	345,502	367,558
„ France -	330,990	831,610	114,791	339,962
„ other countries	533,300	615,380	221,849	240,979

It will be seen that the consignments from Argentina and India were less than half those of the first six months of 1895, and accounted for over 5 million cwts. of the total decline of 5½ million cwts. in the imports of wheat.

The quantity of wheat imported from other countries includes 1,001,800 cwts. from Canada, compared with 521,900 cwts. in the corresponding period of the previous year, while Turkey and Roumania supplied 2,456,000 cwts. during the present year, against 800,000 cwts. in 1895.

The most noteworthy item in the importation of flour was the remarkable increase in the consignments of this article from France.

### IMPORTS OF FRUIT, VEGETABLES, AND HOPS.

The importation of fruit generally was less than in the corresponding period of last year, though there was a considerable augmentation in the quantity of lemons imported. As regards vegetables, the principal feature was a decline of nearly a million cwts. in the imports of potatoes, comparing the two half years. There appears to have been a decided fall in the price of imported onions, the declared values in the first six months of the current year representing an average of 2s. 4d. per bushel as compared with 3s. 9d. in 1893.

The principal source of the potato supply was the Channel Islands, whence 1,161,000 cwts. were exported to this country; while 485,000 cwts. came from France. The exceptional supply which was sent from Germany in the first half of 1895 was not maintained, and the importation from that country fell from



817,000 cwts. in that period to 14,000 cwts. in the first half of this year.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
<b>Fruit :—</b>	<b>Bushels.</b>	<b>Bushels.</b>	<b>£</b>	<b>£</b>
Apples - - - -	1,372,819	987,433	418,804	302,757
Oranges - - - -	5,282,377	4,746,622	1,441,724	1,271,204
Lemons - - - -	617,437	866,042	172,329	213,234
Cherries - - - -	127,452	123,526	74,067	73,352
Plums - - - -	5,073	9,280	5,185	9,693
Pears - - - -	14,360	2,587	7,271	1,359
Grapes - - - -	10,874	14,669	13,922	21,184
Unenumerated - -	338,289	415,753	189,622	234,299
	—	—	2,322,924	2,127,082
<b>Vegetables :—</b>				
Onions - - - -	2,407,323	2,594,863	319,658	301,483
	Cwts.	Cwts.		
Potatoes - - - -	2,823,282	1,859,340	948,742	819,696
Unenumerated - -	—	—	584,452	640,011
<b>Total - - - -</b>	<b>—</b>	<b>—</b>	<b>1,852,852</b>	<b>1,761,190</b>
Hops - - - -	105,703	106,292	328,104	258,778

### IMPORTS OF FLAX, HEMP, JUTE, AND SEEDS.

The following table shows the imports of flax, hemp, jute, and seeds. No material change appears to have occurred in the supply of these articles :—

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	<b>Tons.</b>	<b>Tons.</b>	<b>£</b>	<b>£</b>
Flax - - - -	62,374	59,153	2,014,724	1,927,080
Hemp - - - -	37,412	50,116	818,516	1,082,197
Jute - - - -	210,400	187,349	2,273,017	2,147,430
<b>Total - - - -</b>	<b>310,186</b>	<b>296,618</b>	<b>5,106,257</b>	<b>5,156,707</b>
<b>Seeds :—</b>	<b>Cwts.</b>	<b>Cwts.</b>		
Clover and grass - - -	230,193	249,739	540,292	480,086
	Qrs.	Qrs.		
Flax and linseed - - -	928,778	1,147,483	1,557,865	1,872,110
Rape - - - -	146,067	103,588	140,748	102,659
<b>Total - - - -</b>	<b>—</b>	<b>—</b>	<b>2,238,905</b>	<b>2,454,855</b>

## IMPORTS OF HIDES, WOOD, AND TIMBER.

A decrease has taken place in the importation both of wet and dry hides. As regards timber, though the importation for the present year exhibits an increase over 1895, the figures are very comparable with those for 1894. The quantity of wood, sawn or planed, imported in the first half of that year was 1,643,000 loads, or about 150,000 loads less than the present year. About 50 per cent. of this importation comes from Sweden and Norway.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
Hides, raw, and pieces thereof :—	Cwts.	Cwts.	£	£
Dry - - - - -	242,007	186,563	549,126	469,633
Wet - - - - -	409,024	255,790	810,468	559,627
Total - - -	651,031	442,353	1,359,594	1,029,260
Wood and Timber :—	Loads.	Loads.		
Hewn - - - - -	890,458	1,048,498	1,555,943	2,010,728
Sawn or split, planed or dressed	1,080,553	1,802,052	2,419,580	4,008,866
Staves of all dimensions - - -	40,586	57,770	200,272	292,785
Total - - -	2,011,597	2,908,320	4,175,795	6,312,379

## IMPORTS AND EXPORTS OF SHEEP AND LAMBS' WOOL.

The total quantity of sheep and lambs' wool imported in the first half of 1896 was less by about 44,000,000 lbs. than the quantity imported in the same period of 1895. In the first six months of 1894, however, the total quantity imported was 498,432,000 lbs.

The average value per lb. of the colonial and foreign sheep and lambs' wool received in the six months ended June last works out to 8½d., or about ½d. per lb. in excess of the value of the imports of the corresponding six months of 1895.

The quantities and values of the imports of sheep and lambs' wool are shown below :—

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	lbs.	lbs.	£	£
From Australasia -	418,571,693	353,104,980	13,929,917	12,948,889
From British Possessions in South Africa.	42,370,630	60,461,000	1,600,135	1,933,672
From British East Indies.	19,652,970	22,921,450	513,424	642,471
From other countries -	44,680,907	44,229,585	1,423,407	1,512,397
Total - - -	525,276,200	481,717,015	17,466,883	17,037,429

The quantity of alpaca, vicuña, and llama wool imported in the first six months of 1896 was 2,654,640 lbs., against 1,444,950 lbs. and 2,098,171 lbs. in the same periods of 1895 and 1894 respectively. The rise in value of these kinds of wool to which reference was made in the March (1896) number of the Journal has been practically maintained, for the average value per lb. of the imports in the first half of this year was 15·7*d.* as compared with 15·8*d.* in the year 1895.

The total quantity of mohair and other kinds of goats' wool or hair imported in the first six months of this year was 4,400,000 lbs., or about 8 million lbs. short of the imports of the corresponding half year of 1895. The imports of mohair, which until this year have not been separately distinguished, amounted in the six months to 3,025,460 lbs. of the value of 193,211*l.* or 15·3*d.* per lb.

The exports of sheep and lambs' wool, both of home and foreign production were less than in the period for 1895, as will be seen from the following table. The exportation of home-grown wool in the first half of 1894 was, however, only 4,438,500 lbs.; so that the quantity exported this year showed an increase on that figure of about 3,000,000 lbs.

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
United States :	lbs.	lbs.	£	£
Home -	5,908,100	4,581,900	184,907	167,482
Foreign -	52,817,200	35,368,300	1,737,048	1,185,395
Germany :				
Home -	1,280,000	989,500	54,882	50,645
Foreign -	74,417,003	75,839,400	3,037,926	2,873,200
France :				
Home -	354,700	537,900	14,715	24,606
Foreign -	53,768,300	48,105,300	1,974,947	1,763,548
Other countries :				
Home -	1,988,800	1,455,800	103,080	80,902
Foreign -	35,326,470	35,086,800	1,375,982	1,305,141
Total - { Home -	9,531,600	7,565,100	357,584	323,635
Foreign -	216,328,973	194,399,800	2,125,903	7,127,284

The total exportation of foreign wool in the first half of the present year was about the same as in the corresponding period of 1894, when 194,948,000 lbs. were exported.



### IMPORTS OF MANURES.

The quantity as well as the value of the guano imported in the first half of 1896 showed a considerable decline compared with the imports of the corresponding periods of the last two years.

Description.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Tons.	Tons.	£	£
Bones, whether burnt or not	38,154	40,147	167,648	158,577
Guano - - - - -	27,183	12,551	220,783	61,045
Nitrate of Soda - - - -	82,752	79,586	684,830	626,041
Phosphate of Lime and Rock	173,307	152,684	316,162	252,379
Total - - - - -	321,396	284,968	1,389,423	1,098,042

### IMPORTS OF TALLOW AND STEARINE.

The following table shows the imports of tallow and stearine :—

Countries.	Quantities.		Values.	
	First Six Months of 1895.	First Six Months of 1896.	First Six Months of 1895.	First Six Months of 1896.
	Cwts.	Cwts.	£	£
From Australasia - - -	916,015	814,780	1,090,931	904,971
" Argentina - - - -	30,150	87,067	34,707	96,255
" United States - - -	58,035	212,924	52,022	203,341
" other countries - - -	71,034	98,154	97,770	117,450
	1,075,234	1,212,925	1,275,430	1,322,017

### IMPORTS OF ANIMALS FROM IRELAND.

The following statement shows the number of animals imported into Great Britain from Ireland during the first six months of the year 1896, compared with the corresponding periods of 1895 and 1894 :—

Animals.	Six Months ending 27th June 1896.	Six Months ending 29th June 1895.	Six Months ending 30th June 1894.
Cattle - - - - -	270,970	287,059	302,051
Sheep - - - - -	245,120	195,232	317,961
Swine - - - - -	310,566	304,597	295,571
Goats - - - - -	2,569	2,750	4,762
Horses - - - - -	20,625	16,053	17,074

## PRICES OF LIVE STOCK AS RETURNED UNDER THE WEIGHING OF CATTLE ACT.

The returns of prices under the Markets and Fairs (Weighing of Cattle) Act, 1891, for the second quarter of 1896 are now available. From the detailed particulars rendered to the Board of Agriculture by the market authorities and auctioneers, respecting the actual number of animals entering, the number of these which were weighed, and the values current at the markets or auction marts of the 19 places scheduled by the statute in Great Britain, it appears that the numbers of animals whereof the weight was ascertained, and the current prices per live stone or live cwt. calculated, continue to show an increase. This improvement in the case of cattle is still more marked than the absolute figures show, when it is noted that the total number entering the scheduled places was considerably below the figures of the like quarters of previous years.

The comparison stands as under:—

Animals.	2nd Quarter, 1896.	2nd Quarter, 1895.	2nd Quarter, 1894.
<b>CATTLE :</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Entering markets - - -	268,864	298,040	294,821
Weighed - - - - -	28,859	26,063	25,324
Prices returned - - -	27,201	23,505	23,332
Prices returned with quality distinguished.	19,737	15,996	15,809
<b>SHEEP :</b>			
Entering markets - - -	1,136,350	1,131,996	1,332,162
Weighed - - - - -	13,130	10,929	14,901
Prices returned with quality distinguished.	11,425	5,583	9,503
<b>SWINE :</b>			
Entering markets - - -	58,670	58,943	28,110
Weighed - - - - -	1,634	636	395
Prices returned - - -	620	301	37
Prices returned with quality distinguished.	620	—	10

These data show that the practice of weighing swine, which has hitherto been comparatively rare, and is still practically confined to three markets only—Leeds, Newcastle, and Perth—has made further progress, the total weighed being 1,634 against 636 in the same months of 1895, and against 395 in those of 1894. Prices of weighed swine were reported in twice as many instances as in the like quarter of 1895, but nearly the whole of the price quotations came from Newcastle alone.

The numbers of sheep weighed were considerably more than in the same period of 1895, though not so numerous as in 1894

when the supply of sheep in the markets was larger; but the increase in the number of cases where prices were reported to the Board this year is satisfactory, being more than double those reported last year. This increase arises, however, mainly in Scotland, and there practically at the marts of Aberdeen and Dundee.

Separating, as regards cattle, the English from the Scotch returns, the proportion of animals weighed is still largely in favour of Scotland. The English figures are as under:—

Cattle at Scheduled Prices in England,	2nd Quarter, 1896.	2nd Quarter, 1895.	2nd Quarter, 1894.
Number entering markets - - -	194,079	224,010	228,125
Number weighed - - - - -	6,683	6,176	6,555
Prices returned with quality distinguished.	5,182	3,741	4,571

The English figures thus show less than  $3\frac{1}{2}$  per cent. of the cattle to have passed over the weighbridge, while the parallel records from the five markets of Scotland indicate an approach to 30 per cent., and a satisfactory advance over the like quarters of the two preceding years. The Scotch returns are as follows:—

Cattle at Scheduled Places in Scotland.	2nd Quarter, 1896.	2nd Quarter, 1895.	2nd Quarter, 1894.
Number entering markets - - -	74,785	74,030	66,696
Number weighed - - - - -	22,176	19,887	18,769
Prices returned - - - - -	22,019	19,764	18,761
Prices returned with quality distinguished.	14,555	12,255	11,238

Neither Ashford, Birmingham, nor Lincoln report a single use of the weighbridge during the quarter, while the weighing of four animals only out of 16,000 at York, and the reporting of a price in respect of only one of these, places this city in the same unsatisfactory category, and indicates the failure of the cattle owners of these districts to appreciate the facilities which the Legislature has provided for the marketing of their stock. These defective returns contrast very strongly with others in the general table supplied on page 226, and particularly with a case like that of Dundee, where, in a relatively small market, out of 4,916 cattle exposed for sale during the quarter, the weighing of 3,294, or nearly 67 per cent., is reported, and the prices of all the weighed animals have been duly recorded.

The reports of prices for ten selected markets where the quotations are sufficiently numerous for the purposes of com-



parison may, as regards stock not distinguished as stores, be compared as under for the second quarters of 1896 and 1895:—

Places.	Inferior or Third Quality.		Good or Second Quality.		Prime or First Quality.	
	1896.	1895.	1896.	1895.	1896.	1895.
	Per Cwt. <i>s. d.</i>	Per Cwt. <i>s. d.</i>	Per Cwt. <i>s. d.</i>	Per Cwt. <i>s. d.</i>	Per Cwt. <i>s. d.</i>	Per Cwt. <i>s. d.</i>
Leeds - - -	27 10	—	29 10	—	32 0	—
Liverpool - -	—	—	29 2	28 0	33 0	34 8
London - - -	27 0	28 6	33 4	36 0	36 10	38 4
Newcastle - -	25 8	—	29 10	34 4	33 10	36 2
Shrewsbury -	27 0	26 2	30 4	31 6	—	34 6
Aberdeen - -	24 2	25 8	31 4	33 1	34 6	36 9
Dundee - - -	25 0	28 11	30 8	33 9	32 10	35 5
Edinburgh - -	—	—	32 6	36 1	32 6	36 0
Glasgow - - -	31 6	—	32 0	—	34 6	—
Perth - - -	30 4	33 9	32 2	34 7	33 10	36 2

At all but two of these markets the price per cwt. for each grade stands below the quotation for the same months of 1895. The prices in the inferior grade are always somewhat wide. In the medium grade, or second quality, the range between one market and another of the averages thus computed is between 29s. 2d. at Liverpool and 33s. 4d. at London. In the case of prime or first quality cattle the Leeds quotation falls to 32s. while the London figure is 36s. 10d. In the Scotch towns where, as before indicated, the quotations are more numerous than in the south, the prices of the first quarter for prime stock range from 32s. 6d. to 34s. 6d., while in the same quarter of 1895, the prices ran from 35s. 5d. to 36s. 9d. per cwt.

A further table to show the numbers of the cattle priced in each category in the second quarter of 1896 may be added:—

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Leeds - - -	17	<i>s. d.</i> 3 5½	27 10	46	<i>s. d.</i> 3 8½	29 10	204	<i>s. d.</i> 4 0	32 0
Liverpool - -	—	—	—	254	3 7½	29 2	462	4 1½	33 0
London - - -	29	3 4½	27 0	390	4 2	33 4	968	4 7½	36 10
Newcastle - -	29	3 2½	25 8	20	3 8½	29 10	814	4 2½	33 10
Shrewsbury -	45	3 4½	27 0	71	3 9½	30 4	—	—	—
Aberdeen - -	1,377	3 0½	24 2	3,536	3 11	31 4	1,913	4 3½	34 6
Dundee - - -	173	3 1½	25 0	1,717	3 10	30 8	1,378	4 1½	32 10
Edinburgh - -	—	—	—	2,495	4 0½	32 6	369	4 1	32 8
Glasgow - - -	29	3 11½	31 6	282	4 0	32 0	303	4 3½	34 6
Perth - - -	71	3 9½	30 4	431	4 0½	32 2	374	4 2½	33 10

These prices are all for cattle not distinguished as stores, and therefore presumed to rank as fat stock. The only place where any considerable number of stores is returned as weighed is Shrewsbury, where 64 inferior, 515 second quality, and 446 prime cattle had their weights and prices recorded. The average prices calculated on this class of stock, so far as weighed at this market, were 26s. 8d. per cwt. for inferior, 31s. for second quality, and 34s. 4d. for first quality stores.

During the quarter now ended, it has to be noted that from six of the last noted markets, over 800 reports of actual sales "*per live cwt.*" are returned, those from Dundee and London being the most numerous. The London prices thus ascertained were 30s. 4d., 32s. 4d. and 36s. 10d. per live cwt. for the three qualities of stock respectively, and those from Dundee ran at 25s. 2d., 31s. 6d., and 32s. 6d. for the three grades. Separately shown, these groups of transactions by actual live weight were returned as under, in the quarter under review.

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Liverpool	—	s. d.	s. d.	44	s. d.	s. d.	36	s. d.	s. d.
London	9	3 9½	30 4	80	4 0½	32 4	118	4 7½	38 10
Newcastle	—	—	—	—	—	—	37	4 1½	33 2
Dundee	9	3 1½	25 2	61	3 11½	31 6	263	4 0½	32 6
Edinburgh	—	—	—	—	—	—	34	4 3½	34 6
Glasgow	—	—	—	92	3 11½	31 10	22	4 1½	33 0

The customary detailed table giving the number of animals for each of the scheduled places in the three months under review shows how very widely the practice of different districts varies, and is as follows:—

**Cattle, Sheep, and Swine**, entering the **MARKETS** and **MARTS** of the under-mentioned Places with the number **WEIGHED**, as received from the Market Authorities in the **Second Quarter** 1896, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
<b>ENGLAND.</b>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Ashford - -	2,822	—	—	20,675	—	—	6,443	—	—
Birmingham - -	8,225	—	—	29,350	—	—	1,714	—	—
Bristol - - -	13,610	76	71	37,892	—	—	4	—	—
Leicester - - -	16,899	80	73	22,537	80	—	2,203	—	—
Leeds - - -	7,671	267	267	43,550	1,032	1,032	3,931	1,014	—
Lincoln - - -	2,339	—	—	19,732	—	—	3,502	—	—
Liverpool - - -	7,953	716	716	78,480	854	854	—	—	—
London - - -	16,415	2,724	1,387	191,820	1,652	112	1,160	—	—
Newcastle-upon-Tyne	24,778	863	863	76,044	—	—	7,919	535	535
Norwich - - -	24,893	203	203	69,790	—	—	8,706	—	—
Salford - - -	26,188	201	201	189,775	54	54	648	—	—
Shrewsbury - - -	9,671	1,290	1,141	9,028	—	—	4,188	—	—
Wakefield - - -	16,565	259	259	64,187	—	—	5,891	—	—
York - - -	16,045	4	1	19,971	—	—	322	1	1
<b>SCOTLAND.</b>									
Aberdeen - - -	17,066	6,826	6,826	56,335	6,027	6,027	4,611	—	—
Dundee - - -	4,916	3,294	3,294	5,766	1,120	1,120	713	—	—
Edinburgh - - -	18,049	6,788	*2,938	60,687	—	—	1,693	—	—
Glasgow - - -	13,763	714	621	78,930	318	233	2,557	—	—
Perth - - -	20,991	4,554	*876	61,801	1,993	1,993	2,465	84	84
<b>TOTAL for ENGLAND</b>	194,079	6,683	5,182	872,831	3,672	2,052	46,631	1,550	536
<b>TOTAL for SCOTLAND</b>	74,785	22,176	*14,555	263,519	9,458	9,373	12,039	84	84
<b>Total - - -</b>	268,864	28,859	*19,737	1,136,350	13,130	11,425	58,670	1,634	620

\* Prices for 3,786 cattle in addition to the above were quoted from Edinburgh, and for 3,673 cattle from Perth, but without distinguishing the quality.



## PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

## I.—PRICES OF MEAT.

AVERAGE PRICES of DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the First and Second Quarters of 1896.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	1ST QUARTER, 1896.	2ND QUARTER, 1896.
<b>BEEF :—</b>	<i>s. d. s. d.</i>	<i>s. d. s. d.</i>
Scotch, short sides - -	3 10 to 4 1	4 0 to 4 3
„ long sides - -	3 6 „ 3 9	3 7 „ 3 9
English, Prime - -	3 6 „ 3 9	3 6 „ 3 9
Cows and Bulls - -	1 8 „ 2 8	1 8 „ 2 8
American, Birkenhead killed	2 10 „ 3 1	2 9 „ 3 1
„ Deptford killed -	2 10 „ 3 2	2 10 „ 3 2
„ Refrig. hind-qrs. -	3 0 „ 3 4	3 3 „ 3 7
„ „ fore-qrs. -	1 11 „ 2 1	1 7 „ 1 10
Argentine - -	2 2 „ 2 9	—
Australian, Refrig. hind-qrs. -	1 7 „ 1 9	1 10 „ 1 11
„ „ fore-qrs. -	1 4 „ 1 5	1 1 „ 1 2
New Zealand, Refrig. hind-qrs.	—	2 1 „ 2 3
„ „ fore-qrs.	—	1 2 „ 1 3
<b>MUTTON :—</b>		
Scotch, Prime - -	4 0 „ 4 5	4 3 „ 4 9
English, Prime - -	3 10 „ 4 4	3 11 „ 4 5
Ewes - -	2 9 „ 3 4	2 10 „ 3 5
Dutch - -	3 4 „ 3 9	} 3 8 „ 4 3
German - -	3 5 „ 3 9	
New Zealand - -	2 1 „ 2 7	1 8 „ 2 3
Australian - -	1 6 „ 1 8	1 5 „ 1 6
River Plate, Frozen - -	1 5 „ 1 8	1 5 „ 1 6
„ „ Town killed -	2 11 „ 3 2	3 1 „ 3 4
<b>LAMB :—</b>		
English - -	6 1 „ 7 4	5 5 „ 6 6
New Zealand - -	3 6 „ 4 1	2 11 „ 3 4
<b>VEAL :—</b>		
English - -	4 8 „ 5 4	3 9 „ 4 7
Foreign - -	3 8 „ 4 6	3 2 „ 3 8
<b>PORK :—</b>		
English, small - -	3 0 „ 3 4	3 1 „ 3 5
„ medium and large -	} 2 4 „ 2 11	2 5 „ 2 11
Foreign - -		

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE and SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
2nd Quarter 1895	2 9	4 2	4 6	4 1	5 2	5 9
3rd Quarter „	2 8	3 11	4 7	3 8	5 1	5 9
4th Quarter „	2 5	3 10	4 7	3 8	5 5	5 11
1st Quarter 1896	2 4	3 10	4 5	3 4	5 2	5 8
2nd Quarter „	2 4	3 8	4 4	3 3	4 9	5 3

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
2nd Quarter 1895	2 8	to 3 10	3 8	to 5 2	3 0	to 4 4	3 8	to 5 6
3rd Quarter „	3 2	„ 3 10	3 6	„ 5 2	2 8	„ 4 0	3 4	„ 4 8
4th Quarter „	2 8	„ 3 6	3 4	„ 4 10	2 8	„ 3 8	3 0	„ 4 6
1st Quarter 1896	2 0	„ 3 2	3 0	„ 4 10	2 8	„ 3 8	3 0	„ 4 6
2nd Quarter „	2 0	„ 3 4	3 0	„ 5 0	2 4	„ 3 6	3 8	„ 4 10

\* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the *Liverpool Abattoir*, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

I.—PRICES OF MEAT—*continued.*

## BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the BERLIN CATTLE MARKET in the four under-mentioned months of 1896.

MONTHS.	CATTLE.		SHEEP.	
	Per Cwt.		Per Cwt.	
April 1896.	s. d.	s. d.	s. d.	s. d.
- - - -	57 4	to 59 9	43 1	to 45 6
May - - - -	55 4	„ 58 0	44 1	„ 45 10
June - - - -	54 0	„ 55 6	45 10	„ 47 4
July - - - -	56 0	„ 58 7	49 8	„ 51 2

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirthschaftliche Presse*.

## PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the four under-mentioned months of 1896.

MONTHS.	OXEN.	CALVES.	SHEEP.	PIGS.
	Per Cwt.	Per Cwt.	Per Cwt.	Per Cwt.
LIVE WEIGHT.				
April 1896.	s. d.	s. d.	s. d.	s. d.
- - - -	32 2	42 5	41 0	29 10
May - - - -	31 9	41 3	40 10	28 1
June - - - -	31 8	36 7	40 4	26 11
July - - - -	32 1	34 10	41 7	29 7
DEAD WEIGHT.				
April 1896.	s. d.	s. d.	s. d.	s. d.
- - - -	58 4	72 10	76 5	43 2
May - - - -	57 3	73 1	75 4	42 7
June - - - -	56 10	65 10	74 1	42 9
July - - - -	57 10	58 2	75 9	43 10

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.



I.—PRICES OF MEAT—*continued*.

## CHICAGO.

PRICES of CATTLE at CHICAGO per Cwt. (Live Weight) in the under-mentioned months of 1896.

Months.	Good Dressed Beef and Shipping Steers.		Export Cattle.		Extra Prime Cattle.	
1896.	s.	d.	s.	d.	s.	d.
April - -	17	6 to 19	16	7 to 20	19	2 to 22
May - -	18	2 „ 20	17	3 „ 19	18	8 „ 21
June - -	18	0 „ 19	17	0 „ 20	19	10 „ 21
July - -	19	2 „ 20	18	0 „ 21	21	0 „ 21

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co., of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per *Cwt.*, of various Kinds of DEAD MEAT Imported into the United Kingdom from FOREIGN COUNTRIES and BRITISH POSSESSIONS in the under-mentioned Quarters of 1895 and 1896.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.	PORK.		BACON.	HAMS.
	Fresh.	Salted.	Fresh.	Fresh.	Salted.		
2nd Quarter 1895 -	s. d. 38 11	s. d. 25 9	s. d. 35 9	s. d. 48 2	s. d. 25 3	s. d. 38 2	s. d. 44 5
3rd Quarter „ -	38 3	25 5	34 8	48 11	21 7	41 7	46 1
4th Quarter „ -	38 9	26 3	34 11	45 11	22 3	39 4	45 11
1st Quarter 1896 -	37 7	26 0	33 2	45 7	25 11	33 3	41 9
2nd Quarter „ -	38 7	24 10	32 6	46 5	21 6	35 1	41 6

## II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,\* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1896, 1895, and 1894.

QUARTER ENDED	PRICES.			QUANTITIES.		
	1896.	1895.	1894.	1896.	1895.	1894.
<b>Wheat.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	25 8	20 1	25 1	448,046	652,874	613,313
Midsummer - -	25 2	23 1	24 4	384,559	496,615	429,450
Michaelmas - -	—	23 11	22 11	—	361,223	313,288
Christmas - -	—	25 1	19 2	—	417,671	600,773
<b>Barley.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	22 5	21 6	23 1	955,902	1,035,588	671,620
Midsummer - -	21 4	20 3	25 2	92,739	79,996	40,863
Michaelmas - -	—	21 3	22 1	—	141,985	95,121
Christmas - -	—	24 10	22 7	—	2,169,067	1,921,744
<b>Oats.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	13 9	13 9	18 1	259,564	250,838	193,922
Midsummer - -	14 3	15 2	18 7	99,672	111,424	61,862
Michaelmas - -	—	15 1	17 11	—	88,312	70,824
Christmas - -	—	13 10	13 10	—	215,365	239,139

\* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel, or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

## II.—CORN PRICES :—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1896, and in the Corresponding Weeks in 1895 and 1894.

Weeks ended (in 1896)	Wheat.			Barley.			Oats.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
Jan. 4 -	s. d. 25 2	s. d. 20 4	s. d. 23 4	s. d. 24 7	s. d. 21 5	s. d. 23 10	s. d. 13 10	s. d. 14 2	s. d. 17 8
" 11 -	25 4	20 8	26 4	23 11	21 3	23 10	13 9	13 9	18 0
" 18 -	25 10	20 8	26 3	23 6	21 8	29 2	13 11	14 0	18 0
" 25 -	26 1	20 9	26 1	23 7	21 11	29 1	13 10	13 10	18 0
Feb. 1 -	26 3	20 6	25 7	23 1	21 5	28 11	14 1	13 10	18 1
" 8 -	26 4	19 11	25 3	22 5	21 8	28 8	14 0	13 6	17 10
" 15 -	26 7	19 10	24 10	21 11	21 10	28 3	14 0	13 8	18 0
" 22 -	26 3	19 10	24 5	21 10	22 2	28 0	13 9	13 9	18 4
" 29 -	25 6	19 10	24 3	21 10	21 9	27 5	13 10	14 0	18 5
Mar. 7 -	25 4	19 9	24 3	21 5	21 6	27 0	13 8	13 9	18 4
" 14 -	25 5	19 9	24 3	21 3	21 7	27 5	13 10	13 8	18 4
" 21 -	25 1	20 0	24 4	21 1	20 10	26 11	13 9	13 10	18 1
" 23 -	24 10	20 3	24 6	21 4	20 10	27 1	13 4	14 0	18 0
Apr. 4 -	24 7	20 4	24 6	21 10	20 11	26 7	13 3	14 5	18 3
" 11 -	24 6	20 4	24 7	21 0	21 3	27 10	13 1	13 11	18 2
" 18 -	24 11	20 6	24 8	23 6	21 2	28 6	14 0	14 5	18 4
" 25 -	25 6	20 9	24 10	21 0	20 8	26 3	13 11	14 2	18 3
May 2 -	25 8	21 4	24 10	22 6	20 5	26 1	14 3	14 8	18 7
" 9 -	25 7	22 4	24 9	21 0	20 8	24 11	14 4	15 3	18 9
" 16 -	25 7	22 10	24 5	21 0	20 6	25 0	14 5	15 3	18 9
" 23 -	25 6	23 5	24 4	21 8	20 1	24 0	14 6	15 9	18 10
" 30 -	25 4	24 5	23 11	21 5	19 4	23 11	14 10	15 10	18 9
June 6 -	25 5	25 9	23 9	21 6	19 9	26 11	14 8	15 10	18 6
" 13 -	25 1	26 2	23 10	19 3	19 4	24 11	14 9	15 11	18 9
" 20 -	25 1	26 5	23 11	22 8	19 5	22 5	15 1	16 1	18 10
" 27 -	24 10	26 1	24 1	19 5	20 3	20 5	14 10	16 7	19 2
July 4 -	24 9	25 7	24 6	16 2	19 9	23 7	15 0	16 4	19 6
" 11 -	24 7	25 0	24 5	18 11	20 8	21 0	14 9	15 7	19 7
" 18 -	24 2	24 4	24 6	18 3	18 6	19 6	15 4	16 6	19 7
" 25 -	24 0	24 1	24 8	19 8	19 10	22 5	15 0	15 11	20 5
Aug. 1 -	23 8	24 2	24 4	19 7	18 2	21 4	14 10	15 9	19 8
" 8 -	23 6	24 3	24 4	19 5	20 0	21 4	14 9	16 5	19 9
" 15 -	22 11	24 6	24 5	21 1	19 3	16 5	14 6	16 1	18 9
" 22 -	22 4	24 5	24 1	21 11	20 8	22 3	14 3	15 7	17 8
" 29 -	22 5	23 10	22 7	21 10	23 5	24 1	13 7	14 5	17 1



## II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the First and Second Quarters of 1896.

COUNTRIES from which Exported.	Average-Value per Imperial Quarter.	
	First Quarter, 1896.	Second Quarter, 1896.
	<i>s. d.</i>	<i>s. d.</i>
ARGENTINE REPUBLIC - - - -	26 1	25 6
CHILE - - - - -	25 11	25 11
ROUMANIA - - - - -	23 10	24 3
RUSSIA - - - - -	24 5	24 7
TURKEY - - - - -	23 7	24 0
UNITED STATES OF AMERICA { Atlantic	25 6	25 7
{ Pacific	26 9	26 2
AUSTRALASIA - - - - -	27 5	-
INDIA, BRITISH - - - - -	24 5	25 1
NORTH AMERICA, BRITISH - - -	25 5	25 8

## II.—CORN PRICES:—BELGIUM, FRANCE AND ENGLAND.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND in the four under-mentioned months of 1896.

MONTH.	BELGIUM.	FRANCE.	ENGLAND.
WHEAT.			
1896.	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
April - - - - -	26 5	30 6	24 10
May - - - - -	26 11	30 7	25 6
June - - - - -	26 9	30 9	25 1
July - - - - -	26 11	31 1	24 4
BARLEY.			
1896.	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
April - - - - -	21 3	19 10	21 10
May - - - - -	21 7	19 10	21 6
June - - - - -	21 4	19 11	20 8
July - - - - -	19 11	20 1	18 3
OATS.			
1896.	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
April - - - - -	16 7	17 7	13 6
May - - - - -	17 4	17 5	14 5
June - - - - -	17 6	17 6	14 10
July - - - - -	17 7	17 7	15 0

*Note.*—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

## II.—CORN PRICES:—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER  
at the under-mentioned Markets in the four under-  
mentioned months of 1896.

MONTH.				LONDON.	PARIS.	BERLIN.
WHEAT.						
1896.				Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April -	-	-	-	25 3	30 6	34 4
May -	-	-	-	25 11	30 9	34 3
June -	-	-	-	25 2	31 2	32 5
July -	-	-	-	26 11	31 5	30 11
BARLEY.						
1896.				Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d. s. d.
April -	-	-	-	25 3	19 8	20 4 to 22 9
May -	-	-	-	25 0	19 8	20 2 „ 22 10
June -	-	-	-	25 1	19 3	20 3 „ 23 3
July -	-	-	-	20 3	18 11	19 4 „ 22 9
OATS.						
1896.				Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
April -	-	-	-	14 7	17 7	16 9
May -	-	-	-	15 10	17 11	17 5
June -	-	-	-	15 11	17 9	17 8
July -	-	-	-	16 3	17 6	17 4

*Note.*—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.  
 MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE,  
 in the months of June and July 1896, and in the Second  
 Quarter of 1896.

(Compiled from the *Grocer*.)

DESCRIPTION.	2nd Quarter of 1896.	Month of June 1896.	Month of July 1896.
	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.	Per Cwt. s. d. s. d.
BUTTER :			
Cork, 1sts -	84 2 to —	79 0 to —	79 6 to —
„ 2nds -	76 9 „ —	76 3 „ —	75 6 „ —
„ 3rds -	71 6 „ —	73 9 „ —	70 6 „ —
„ 4th -	64 11 „ —	67 3 „ —	65 3 „ —
Friesland -	74 6 „ 78 8	75 6 „ 79 6	84 6 „ 87 0
Dutch Factories -	78 5 „ 83 9	78 6 „ 84 0	87 6 „ 92 0
French Baskets -	92 3 „ 98 5	88 0 „ 91 0	94 6 „ 99 6
„ Crocks and Firkins.	82 8 „ 88 10	79 0 „ 85 0	84 6 „ 91 6
„ 2nds and 3rds	74 6 „ 79 10	72 0 „ 76 0	72 0 „ 79 6
Danish and Swedish	90 7 „ 95 3	91 6 „ 97 0	93 0 „ 98 0
Finnish -	80 6 „ 86 10	80 0 „ 86 0	81 6 „ 88 0
Russian -	76 5 „ 83 11	76 0 „ 82 6	74 6 „ 81 6
Australian -	69 4 „ 92 0	70 0 „ 92 0	— —
New Zealand -	62 0 „ 87 10	66 0 „ 81 0	— —
Argentine -	79 9 „ 89 6	— —	— —
American -	51 3 „ 77 1	46 0 „ 73 9	46 0 „ 85 0
Fresh Rolls (Foreign) per doz.	9 4 „ 13 0	9 0 „ 13 0	9 9 „ 13 9
MARGARINE :			
Margarine -	18 10 „ 49 8	18 0 „ 50 0	20 0 „ 50 0
Mixtures -	52 2 „ 74 11	52 0 „ 74 0	52 0 „ 74 0
CHEESE :			
Cheddar -	39 8 „ 69 0	40 0 „ 67 0	40 0 „ 70 0
Somerset -	40 0 „ 60 0	40 0 „ 60 0	40 0 „ 60 0
Cheshire -	30 0 „ 75 0	30 0 „ 73 0	30 0 „ 74 0
Wiltshire -	50 6 „ 60 0	51 0 „ 60 0	52 0 „ 60 0
Double Gloucester -	40 10 „ 57 6	42 6 „ 56 6	46 0 „ 54 0
Derby -	29 0 „ 46 6	29 0 „ 43 6	30 0 „ 43 0



## PRICES OF VEGETABLES AND FRUIT.

## I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JUNE.				JULY.			
	COVENT GARDEN.		FARRINGDON.		COVENT GARDEN.		FARRINGDON.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Beans, English, per lb. - - -	0 8	to 0 9	—	—	0 8	—	—	—
„ Channel Islands, per lb. -	0 6	„ 0 8	—	—	0 6	—	—	—
„ broad, per half sieve -	1 0	—	—	—	1 0	—	—	—
„ scarlet runners, per half sieve.	—	—	—	—	2 8	—	2 0	—
Carrots, per dozen bunches -	—	—	4 0	to 6 0	—	—	3 3	—
Endive, per dozen - - -	—	—	2 0	—	—	—	—	—
Horseradish, per round - - -	—	—	1 6	„ 2 0	—	—	—	—
Leeks, per dozen - - -	—	—	2 0	—	—	—	—	—
Lettuce, per score - - -	—	—	1 2	—	—	—	1 9	—
Marrows, vegetable, per dozen -	2 6	„ 3 0	—	—	1 3	to 2 0	1 6	—
Mint, per bunch - - -	0 2	—	—	—	—	—	—	—
„ per dozen bunches - - -	—	—	2 6	—	—	—	3 0	—
Mushrooms, per lb. - - -	0 8	„ 0 10	—	—	0 8½	„ 0 10	—	—
„ outdoor, per half sieve	—	—	—	—	3 10	„ 5 3	—	—
Onions, English, per cwt. -	3 0	„ 4 0	—	—	—	—	—	—
„ spring, per dozen bunches	—	—	2 0	—	—	—	2 6	—
Parsley, per dozen bunches -	—	—	2 2	—	—	—	2 10	—
Peas, per sieve - - -	3 0	„ 4 0	3 3	—	3 7	„ 4 4	2 6	—
Potatoes, New:—								
Jerseys, per cwt. - - -	7 0	„ 8 0	7 9	„ 9 6	—	—	—	—
English Myatts, per cwt. -	8 0	„ 11 0	—	—	—	—	—	—
Hebrons, per cwt. - - -	7 0	„ 8 0	—	—	—	—	5 0	to 6 0
Puritans, per cwt. - - -	7 0	„ 8 0	—	—	—	—	5 0	„ 5 6
Spinach, per bushel - - -	—	—	2 6	—	—	—	—	—
Turnips, per dozen bunches -	—	—	3 10	—	—	—	3 7	—

PRICES OF VEGETABLES AND FRUIT—*continued.*I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—*continued.*(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	JUNE.			JULY.		
	BOROUGH AND SPITAL-FIELDS.		STRATFORD.	BOROUGH AND SPITAL-FIELDS.		STRATFORD.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Beans, broad, per bag -	2	0 to 2 6	2 6 to 2 9	1 9 to 2 0	1 5 to 1 10	
scarlet runners, per bushel -	—	—	—	4 2 „ 4 8	4 6 „ 5 4	
Beetroot, per bushel -	1 6 „	2 0		1 6 „	2 0	
„ „ dozen -	—	—	0 5 „ 0 7½	—	—	0 5 „ 0 7
Cabbages, per tally -	1 7 „	2 11	1 1 „ 2 11	1 6 „ 3 0	1 10 „ 3 6	
Endive, per dozen -	1 6	—	—	—	—	—
Greens, per dozen bunches -	1 4 „	1 9	1 0 „ 2 0	—	—	—
Horseradish, per bundle -	1 7 „	2 1	2 0 „ 2 6	—	—	—
Lettuce, per score -	0 6 „	0 10½	—	0 4 „	0 10	—
Mangels, per ton -	—	—	13 0 „ 18 2	—	—	21 3 „ 25 0
Marrows, per dozen -	3 0 „	3 6	—	1 6 „	2 0	—
Onions, Egyptian, per ton -	—	—	88 9 „ 98 9	—	—	70 0 „ 90 0
„ English, per tally -	6 0 „	7 0	—	6 0 „	7 0	—
spring, per dozen bunches -	1 2 „	1 8	1 6 „ 2 4	2 0 „	3 0	2 4 „ 3 4
Parsley, per dozen bunches -	1 2 „	2 3	1 1 „ 1 6	1 6 „	2 6	1 2 „ 1 8
Peas, per bag -	4 0 „	4 6	3 3 „ 5 1	3 6 „	4 0	3 8 „ 6 0
per bushel -	2 6 „	3 2	2 6 „ 2 9	1 9 „	3 0	—
„ blues, per bushel -	3 3 „	4 3	—	—	—	—
„ whites „ -	2 0 „	3 3	—	—	—	—
Potatoes:—						
Old:—						
Bruces, dark soil, per ton -	—	—	15 0 „ 20 0	—	—	—
„ light „ -	—	—	15 7 „ 33 9	—	—	—
Blacklands, per ton -	23 0 „	33 9	—	—	—	—
Magnums „ -	—	—	15 7 „ 31 3	—	—	20 0 „ 40 0
New:—						
Jersey Kidneys, per cwt. -	7 6 „	8 5	7 9 „ 8 9	—	—	4 0 „ 5 3
„ Flukes „ -	8 3 „	9 0	8 4 „ 9 6	—	—	5 6 „ 6 3
St. Malo Flukes „ -	—	—	7 6 „ 8 4	—	—	4 6 „ 6 0
Cherbourg „ -	—	—	7 0 „ 7 7	—	—	5 0 „ 6 6
Myatt's „ -	8 0 „	8 6	—	—	—	—
Canary „ -	—	—	5 0 „ 8 6	—	—	4 0 „ 6 3
Lisbon „ -	5 6 „	6 0	5 0 „ 5 8	—	—	4 6 „ 5 9
Radishes, per tally -	3 2 „	3 8	—	—	—	—
Rhubarb, per dozen bundles -	1 6 „	2 1	1 6 „ 2 1	1 0 „	1 6	—
Spinach, per bushel -	1 4 „	1 8	—	1 9 „	2 3	—
Turnips, per dozen bunches -	2 0 „	2 9	1 7 „ 2 4	2 9 „	3 0	1 10 „ 2 6

PRICES OF VEGETABLES AND FRUIT—*continued.*

## II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	JUNE.		JULY.	
	s. d.	s. d.	s. d.	s. d.
COVENT GARDEN :—				
Apples, Tasmanian, per bushel case	9	6 to 11 0	—	—
Cherries, Dukes, per half sieve	6 6	7 9	5 0 to 5 6	9 0
" Whites, " "	4 0	6 0	6 0	8 0
" Blacks, " "	5 3	6 6	6 2	8 0
Currants, Black, per half sieve	—	—	6 8	7 7
" Red, " "	—	—	3 7	4 3
Figs, per dozen	3 6	5 6	2 1	2 7
Gooseberries, per half sieve	4 0	5 0	2 0	2 6
Grapes, Alicante, per lb.	1 6	2 0	1 6	2 0
" Hamburg, " "	1 1	1 7	1 5	2 4
" Muscats, English, per lb.	2 9	3 6	2 6	3 0
" " Channel Islands, per lb.	1 10	2 6	1 8	2 0
Melons, each	1 6	2 0	1 8	2 2
Nectarines, 1st size, per dozen	12 0	—	11 6	—
" 2nd " " "	5 3	7 6	3 0	5 7
Peaches, 1st size, per dozen	11 0	14 3	9 7	11 7
" 2nd " " "	6 0	7 9	3 0	4 0
" 3rd " " "	2 4	3 3	1 6	2 0
Pine apples, St. Michael, each	2 0	5 0	4 2	7 0
Plums, Early Rivers, per half sieve	—	—	5 6	6 0
Tomatoes, home-grown, smooth, per dozen lbs.	5 6	6 0	4 0	4 7
FARRINGDON :—				
Cherries, Whites, per half bushel	—	—	8 0	13 0
" Black, " "	—	—	4 6	6 9
Currants, Red, " "	—	—	6 0	—
" Black, " "	—	—	7 6	—
Gooseberries, per half bushel	3 0	—	2 6	3 6
Tomatoes, English, per dozen lbs.	7 4	—	3 6	4 6
" Jersey, " "	6 6	—	—	—
BOROUGH AND SPITALFIELDS :—				
Cherries, English, per half sieve	5 0	7 6	4 9	6 9
" foreign, per basket	1 9	2 0	1 6	2 2
Currants, Red, per half sieve	—	—	5 0	5 6
" Black, " "	—	—	5 4	5 10
Gooseberries, per half sieve	3 0	4 0	1 6	3 0
Raspberries, per cwt.	—	—	18 0	23 4
Strawberries, per peck	2 9	3 3	1 9	2 6
Tomatoes, English, per lb.	0 4½	0 6	0 4	0 6
STRATFORD :—				
Gooseberries, per half sieve	2 0	2 8	2 4	3 3
Strawberries, per peck	1 7	3 0	1 3	3 6
Tomatoes, English, per lb.	0 4	0 6	0 4	0 5
" Guernsey, per lb.	0 4	0 5½	0 3½	0 4



## PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per pack of 240 lbs.,  
in the months of June and July 1896.

(Compiled from the *Economist*.)

DESCRIPTION.	JUNE.				JULY.			
	£	s.	£	s.	£	s.	£	s.
South Down - - -	9	0	to 11	0	9	0	to 11	0
Half breds - - -	9	0	„ 10	10	9	0	„ 10	10
Leicester - - -	10	0	„ 11	0	10	0	„ 11	0
Kent Fleeces - - -	9	7	„ 10	9	9	0	„ 10	5

## DISEASES OF ANIMALS.

## I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia**, and of **Swine-Fever**, with the Number of CATTLE and SWINE Slaughtered by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUTBREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been in exposed to Infection.	OUTBREAKS Confirmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
June 1895 -	No. —	No. —	No. —	No. 1,634	No. 15,096
September 1895 -	—	—	—	1,578	18,293
December 1895 -	—	—	—	1,787	26,958
March 1896 -	1	8	78	1,524	19,596
June 1896 -	1	1	105	1,723	24,855

NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
June 1895 -	110	266	251	360	212	16
September 1895	86	178	284	449	125	19
December 1895	115	201	197	359	134	9
March 1896 -	156	257	194	320	194	10
June 1896 -	110	212	172	293	137	11

## II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia**, and of **Swine-Fever**, with the Number of CATTLE and SWINE slaughtered by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUT- BREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	OUT- BREAKS Con- firmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
	No.	No.	No.	No.	No.
June 1895 - -	—	—	—	856	1,491
September 1895 - -	—	—	—	788	1,240
December 1895 - -	—	—	—	165	625
March 1896 - -	—	—	—	267	1,508
June 1896 - -	—	—	—	241	1,614

NUMBER of OUTBREAKS reported as having taken place, and Number of 'ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Ireland in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
June 1895 -	No. 2	No. 2	No. —	No. —	No. 184	No. 51
September 1895	1	1	—	—	162	58
December 1895	—	—	—	—	101	37
March 1896 -	—	—	4	6	156	33
June 1896 -	1	1	—	—	150	86

## POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

### ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l*. to 100*l*. to begin at any age selected.

RETURN OF PURCHASE MONEY. The Premiums for Deferred Annuities can be returned on application, or on Death before the Annuity begins, if the Contract is taken out on these conditions.

IMMEDIATE PENSIONS. Annuities to begin at once, of any amount from 1*l*. to 100*l*. a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the Pensions are payable half-yearly.

Savings Banks Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

PROCEDURE. A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

The following Table shows the cost of an Immediate Life Annuity of £1, and the annual or single premium for which a Deferred Life Annuity of £1 will be granted.



## OLD AGE PENSIONS.—IMMEDIATE LIFE ANNUITIES.

This Table shows the cost of an Immediate Life Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below.

AGE			Males.	Females.	AGE			Males.	Females.
at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.	at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.
			£ s. d.	£ s. d.				£ s. d.	£ s. d.
5 and under	6		25 19 0	27 12 6	44 and under	45		16 15 8	18 13 3
6	"	7	25 15 1	27 9 1	45	"	46	16 9 11	18 6 9
7	"	8	25 11 1	27 5 8					
8	"	9	25 7 0	27 2 2	46	"	47	16 4 2	18 0 0
9	"	10	25 2 11	26 18 8	47	"	48	15 18 3	17 13 2
10	"	11	24 18 10	26 15 1	48	"	49	15 12 3	17 6 1
					49	"	50	15 6 1	16 18 11
11	"	12	24 14 9	26 11 6	50	"	51	14 19 11	16 11 9
12	"	13	24 10 6	26 7 10					
13	"	14	24 6 4	26 4 1	51	"	52	14 13 6	16 4 7
14	"	15	24 2 1	26 0 4	52	"	53	14 7 1	15 17 4
15	"	16	23 17 10	25 16 6	53	"	54	14 0 5	15 9 11
					54	"	55	13 13 8	15 2 4
16	"	17	23 13 6	25 12 7	55	"	56	13 6 9	14 14 9
17	"	18	23 9 1	25 8 8					
18	"	19	23 4 9	25 4 8	56	"	57	12 19 8	14 6 11
19	"	20	23 0 4	25 0 8	57	"	58	12 12 5	13 19 0
20	"	21	22 15 10	24 16 6	58	"	59	12 4 11	13 11 1
					59	"	60	11 17 4	13 3 1
21	"	22	22 11 4	24 12 4	60	"	61	11 9 8	12 15 1
22	"	23	22 6 9	24 8 1					
23	"	24	22 2 3	24 3 10	61	"	62	11 2 2	12 7 0
24	"	25	21 17 7	23 19 5	62	"	63	10 14 11	11 19 0
25	"	26	21 12 11	23 15 0	63	"	64	10 7 8	11 11 0
					64	"	65	10 0 6	11 2 11
26	"	27	21 8 3	23 10 6	65	"	66	9 13 4	10 14 7
27	"	28	21 3 6	23 5 11					
28	"	29	20 18 9	23 1 3	66	"	67	9 6 4	10 6 4
29	"	30	20 13 11	22 16 6	67	"	68	8 19 7	9 18 1
30	"	31	20 9 1	22 11 8	68	"	69	8 12 10	9 9 10
					69	"	70	8 6 2	9 1 10
31	"	32	20 4 2	22 6 9	70	"	71	7 19 5	8 14 2
32	"	33	19 19 2	22 1 9					
33	"	34	19 14 2	21 16 7	71	"	72	7 12 10	8 6 10
34	"	35	19 9 2	21 11 5	72	"	73	7 6 4	7 19 10
35	"	36	19 4 1	21 6 2	73	"	74	7 0 1	7 13 0
					74	"	75	6 14 1	7 6 4
36	"	37	18 18 11	21 0 9	75	"	76	6 8 4	6 19 10
37	"	38	18 13 9	20 15 3					
38	"	39	18 8 6	20 9 7	76	"	77	6 2 8	6 13 7
39	"	40	18 3 2	20 3 11	77	"	78	5 17 4	6 7 5
40	"	41	17 17 10	19 18 0	78	"	79	5 12 3	6 1 6
					79	"	80	5 7 2	5 15 9
41	"	42	17 12 4	19 12 1	80 or any greater age.				
42	"	43	17 6 10	19 5 11					
43	"	44	17 1 4	18 19 8					

OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

*Purchase Money Returnable Scale.*

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d. 1 12 5	£ s. d. 15 15 9	£ s. d. 1 15 10	£ s. d. 17 9 0	£ s. d. 0 13 0	£ s. d. 10 15 1	£ s. d. 0 14 6	£ s. d. 11 19 3
22 " 23	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
23 " 24	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
24 " 25	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
25 " 26	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
26 " 27	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
27 " 28	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
28 " 29	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
29 " 30	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
30 " 31	1 8 8	13 19 6	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
31 " 32	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
32 " 33	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
33 " 34	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
34 " 35	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 0	0 11 2	9 4 6
35 " 36	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
36 " 37	1 6 0	12 13 3	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
37 " 38	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
38 " 39	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
39 " 40	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
40 " 41	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
41 " 42	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
42 " 43	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
43 " 44	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
44 " 45	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
45 " 46	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

*Purchase Money Not Returnable Scale.*

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22 " 23	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23 " 24	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24 " 25	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25 " 26	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26 " 27	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27 " 28	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28 " 29	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29 " 30	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30 " 31	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31 " 32	1 5 10	11 17 8	1 9 6	13 16 11	0 8 9	6 7 5	0 10 5	7 17 11
32 " 33	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 6	0 10 1	7 13 5
33 " 34	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 6	0 9 10	7 8 10
34 " 35	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 6	0 9 6	7 4 2
35 " 36	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 5	0 9 3	6 19 5
36 " 37	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37 " 38	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38 " 39	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 11
39 " 40	1 2 0	9 19 3	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40 " 41	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41 " 42	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42 " 43	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43 " 44	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44 " 45	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45 " 46	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

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Leaflet No. 1	Mites on Currant and Nut Trees.
" " 2	Vine and Raspberry Weevils.
" " 3	The Turnip Fly or Flea.
" " 4	Caterpillars on Fruit Trees.
" " 5	The Mangel Wurzel Fly.
" " 6	The Field Vole.
" " 7	Autumn Catch Crops and Fodder Supply.
" " 8	Farmers and Assessments to Local Rates.
" " 9	Ensilage.
" " 10	Wireworms.
" " 11	The Daddy Longlegs.
" " 12	The Gooseberry Saw-Fly.
" " 13	Acorn Poisoning.
" " 14	The Raspberry Moth.
" " 15	The Apple Blossom Weevil.
" " 16	The Apple Sucker.
" " 17	Preservation of Commons.
" " 18	Fertilisers and Feeding Stuffs Act, 1893.
" " 19	Pea and Bean Weevil.
" " 20	The Magpie Moth.
" " 21	The Warble Fly.
" " 22	The Diamond Back Moth.
" " 23	Potato Disease.
" " 24	The Ribbon Footed Corn-Fly.
" " 25	The Cockchafer.
" " 26	Farmers and the Income Tax.
" " 27	Remission of Tithe Rentcharge.
" " 28	Anthrax.
" " 29	Swine Fever.
" " 30	The Codlin Moth.
" " 31	The Onion Fly.
" " 32	Foul Brood or Bee Pest.
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# The Journal

OF THE

## Board of Agriculture.

December 1896.

	Page
WOOL SUPPLY OF THE UNITED KINGDOM	245
AGRICULTURAL DEPRESSION IN GERMANY	251
CATTLE RAISING INDUSTRY IN THE UNITED STATES	257
FARMERS AND THE INCOME TAX	263
REPORTS ON FOREIGN CROPS	266
INJURIOUS INSECTS AND FUNGI	273
GENERAL AGRICULTURAL NOTES	294
FOREIGN AND COLONIAL OFFICE REPORTS	311
PARLIAMENTARY PUBLICATIONS	321
IMPORTS OF AGRICULTURAL PRODUCE	328
PRICES OF LIVE STOCK	330
STATISTICAL TABLES	335



(For detailed Table of Contents see page v of Advertisements.)



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# The Journal

OF THE

## Board of Agriculture.

Vol. III.]

December 1896.

[No. 3.

### WOOL SUPPLY OF THE UNITED KINGDOM.

The production of wool in the United Kingdom is necessarily dependent upon the various influences which in successive years determine the size of the flocks in this country. A comparison of the numbers of sheep enumerated annually since 1876 with the estimated population of each year during the same period, would show that, while the home production of mutton and wool has remained practically stationary, the number of consumers has increased by about 19 per cent. Reviewing the statistical data for the past 20 years, the average annual number of sheep and lambs relatively to every 1,000 persons in Great Britain and Ireland has been as follows:—

Period.	Average Annual Number of Sheep and Lambs.	Average Annual Population.	Sheep per 1,000 of Population.
1875-77	32,585,000	33,205,000	981
1878-80	31,619,000	34,290,000	922
1881-83	27,839,000	35,197,000	791
1884-86	29,404,000	36,018,000	816
1887-89	29,214,000	36,886,000	792
1890-92	32,871,000	37,796,000	870
1893-95	30,459,000	38,784,000	785
1896	30,786,000	39,452,000	780

The great reduction of the stock in the hands of flockmasters after 1879, and again in 1893-95, may be partly explained by the special circumstances affecting those seasons, viz., the ravages of fluke in 1879-81 and the drought of 1893-94. Making allowance for exceptional influences of this nature, it would appear that there has been no development of sheep-rearing

in this country, and that consequently the supply of home-grown wool, relatively to the demand for that product, must have declined. On this point, however, it is doubtful whether the production of wool in the United Kingdom has satisfied the requirements of the woollen trade at any time during the present century.

It has been estimated that the imports of wool in 1800 amounted to about 9,000,000 lbs., while the quantity of wool produced from sheep in England in the same year has been calculated by some authorities at about 92,160,000 lbs. Prior to 1802, wool had been imported free of duty, but in that year a duty was imposed for the first time on the imports of this staple, which was maintained until 1844 in the case of consignments from foreign countries, colonial wool being released from the charge after 1824. The duty ranged usually from  $\frac{1}{2}d.$  to  $1d.$  per lb., but between 1819 and 1823 as much as  $6d.$  per lb. was charged on the imported product. The immediate effect of this heavy duty was seen in a diminution of the receipts of foreign wool, which dropped from 24,700,000 lbs. in 1818 to 6,000,000 and 9,500,000 lbs. respectively in the next two years. This check was, however, of a temporary character, for in 1821 the imports rose to 16,400,000 lbs., and in the following year to nearly 19,000,000 lbs., and they have since steadily increased, although there have been fluctuations. The export of wool was prohibited before 1825.

An examination of the trade returns for the past 50 years shows that the net annual imports of wool (sheep, lamb, and alpaca) have increased from an average of 66,712,000 lbs. in 1844-46 to 354,621,000 lbs. in 1893-95.

The position occupied by the imported raw sheep and lambs' wool, exclusive of alpaca, relatively to the total supply of the staple available for consumption annually from all sources may be gathered from the following statement. The estimated home production has been calculated from the annual reviews issued by the *Bradford Observer* :—

Period.	Average Annual Home Production.			Average Annual net Imports.	Average Annual Total Supply available for Use.	Per-centage of net Imports to Total Supply.
	Gross Quantity produced.	Exports of British and Irish Produce.	Retained for Home Consumption.			
1875-77	Lbs. 156,597,000	Lbs. 9,968,000	Lbs. 146,629,000	Lbs. 207,149,000	Lbs. 353,778,000	58·6
1878-80	151,221,000	13,173,000	138,048,000	196,417,000	334,465,000	58·7
1881-83	131,973,000	15,786,000	116,187,000	206,727,000	322,914,000	64·0
1884-86	135,029,000	21,271,000	113,758,000	252,029,000	365,786,000	68·9
1887-89	133,402,000	21,638,000	111,764,000	294,225,000	405,988,000	72·5
1890-92	146,193,000	18,050,000	128,143,000	309,412,000	437,555,000	70·7
1893-95	142,505,000	16,900,000	125,604,000	349,780,000	475,384,000	73·6



From the foregoing statement it would appear that the imported raw wool now represents over 70 per cent. of the total quantity required annually for the home and export trade in woollen materials. Comparing the estimated supply with the population at the first and last period given in the table, the average weight of raw wool from all sources available for consumption has risen from approximately 10 lbs. to 12 lbs. per head of the people of the United Kingdom. A further analysis of these figures has shown that, whereas the home production contributed about two-fifths, or 4 lbs. of the 10 lbs. at the earlier period, it has furnished just over one-fourth, or barely  $3\frac{1}{4}$  lbs. out of the average supply per individual, viz., 12 lbs. in more recent years. The diminution in the production of British and Irish wool illustrated by these figures affords support to the argument that there has been some displacement of the home-grown product in our markets.

In the first half of the present century the bulk of the wool imported into this country came from the Continent and as late as 1846 the receipts from across the Channel represented about 45 per cent. of the annual importation. During the last 50 years, however, the consignments from British Colonies and Possessions have gradually displaced the supplies from foreign countries, and the latter now constitute less than 15 per cent. of the total amount of wool received annually in the ports of the United Kingdom.

One of the most remarkable features of the import trade has been the steady expansion of the quantities entered yearly from Australasia. In 1850 the Australian colonies were credited for the first time with about 50 per cent. of the total weight of wool entered. Since that year they have maintained and strengthened their position as the principal competitor among the countries contributing to the volume of imports, and recently the Australasian cargoes have represented in weight about 70 per cent. of the aggregate quantity entered annually from all sources. South African wool has formed about 11 per cent. of the annual average gross importation of the past three years, while the East Indies have sent just over 5 per cent.

In view of the important position occupied by Australasian produce in the British wool-market, it may be not out of place to review briefly at this stage the chief features connected with the growth of the colonial trade in wool, which is generally regarded as the principal product of the pastoral industry of the Australian continent. At the end of 1894 the total number of sheep in Australasia was estimated at 121,161,000 head, of which number about 57 millions, or 47 per cent., were owned by New South Wales; New Zealand ranked next with 20 millions, or  $16\frac{1}{2}$  per cent.; Queensland was credited with 19 millions, or 16 per cent.; Victoria with 13 millions, or 11 per cent.; and South Australia with 7 millions, or 6 per cent. Thus New South Wales is the premier sheep-breeding colony, and it is maintained that, while Victoria has nearly reached the limit of

her natural capabilities in the production of mutton and wool, her northern neighbour has not yet approached that limit.

It seems that in Queensland, as in South Australia, sheep breeding has not hitherto received so much attention as in New South Wales. The first-mentioned colony is said to be more adapted to cattle breeding, and this applies also to the northern territories of South Australia, while in the southern and more settled districts of the latter colony arable cultivation is the more popular branch of farming.

By far the greater number of the sheep in the Australian continent are of the merino race, while in New Zealand long-wooled sheep and cross-breds are now the more popular types. In 1894 the sheep stock of New South Wales was made up of 54 million merinos; 1 million long-wooled sheep, the greater number of these being pure and stud Lincoln and Leicester; and 1,896,000 cross-breds. This proportion may be said to represent roughly the composition of the flocks in the other colonies of the Australian continent.

The imports of wool into the United Kingdom from the several colonies during the last 13 years have been as follows:—

*Quantities (000 omitted.)*

YEAR.	Western Australia.	South Australia.	Victoria.	New South Wales.	Queens- land.	Total Australia.	New Zealand.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1883 - - -	3,701	45,609	98,828	100,629	25,324	274,090	70,837
1884 - - -	4,476	45,859	99,355	120,221	29,924	299,835	75,409
1885 - - -	5,526	41,349	83,201	110,106	31,399	271,582	78,606
1886 - - -	5,786	48,207	93,890	134,930	25,952	308,765	87,209
1887 - - -	5,311	41,505	96,289	115,893	27,627	286,629	91,055
1888 - - -	7,141	40,123	106,581	149,540	35,727	339,112	84,238
1889 - - -	7,973	42,814	91,367	152,268	38,050	332,473	92,060
1890 - - -	11,329	35,626	98,300	127,403	44,141	316,798	95,633
1891 - - -	8,015	49,221	92,654	165,465	50,592	365,947	104,848
1892 - - -	6,421	44,625	99,786	181,837	69,563	402,532	104,738
1893 - - -	6,871	41,779	93,430	150,096	59,403	351,579	117,038
1894 - - -	8,798	45,101	95,540	173,228	49,209	371,876	124,792
1895 - - -	8,650	50,567	111,193	186,087	55,543	412,041	124,227

The bulk of the wool exported from Australia is shipped to British ports. There has been some increase lately in the colonial trade with Eastern markets, and while Japan and China have not, however, hitherto made extensive purchases of Australian wool, there is said to be some prospect of a better demand from markets in these countries.

Although the greater quantity of the wool produced in Australia is merino, a variety which only indirectly competes

with British and Irish produce, flockmasters in New South Wales and Victoria are giving their attention more and more to the production of coarse-wooled sheep, and this change has been stimulated by an increasing demand for cross-bred wool. In discussing the possibility of a further development in this direction, the *Bradford Observer* says, "The market for cross-bred colonial wool demands the serious attention of all our English readers. This wool is increasing in production, and it is increasing in popularity, and so long as the latter condition prevails there is every inducement to the grower to still further increase the production of his cross-bred flock, and the strongest inducement of all is that it pays."

It may be interesting to show here the average value per pound of imported Australasian and South African wool side by side with the prices of some of the leading varieties of British wool distinguished in the Agricultural Returns.

YEARS.	British.				Australasian.		South African.
	Leicester.	Half-Breds.	Southdown.	Lincoln.	New Zealand.	Australian.	
	Per lb. d. — d.	Per lb. d. — d.	Per lb. d. — d.	Per lb. d. — d.	Per lb. d. — d.		Per lb. d. — d.
1876 - -	—	—	17½	17½	15½		15½
1877 - -	—	—	16½	16½	15		15½
1878 - -	—	—	15½	15	14½		15½
1879 - -	—	—	13	12½	14½		14½
1880 - -	—	—	14½	15½	14½		15½
1881 - -	—	—	15½	12½	14½		15
1882 - -	—	—	14	11½	12½		14½
1883 - -	9 to 9½	9½ to 10½	10½ to 14	10	11½	12½	14½
1884 - -	8½ „ 9½	9 „ 9½	10 „ 13½	10	12	12½	13½
1885 - -	8½ „ 9	8½ „ 9½	9 „ 12½	10	10	10½	9½
1886 - -	9 „ 9½	9½ „ 10½	9½ „ 12½	10	8½	9½	9½
1887 - -	9½ „ 10½	10 „ 11½	10½ „ 12½	10½	10½	10½	10½
1888 - -	9½ „ 10	9½ „ 10½	9½ „ 11½	10½	10½	10½	9½
1889 - -	9½ „ 10½	10½ „ 11	10½ „ 12½	11	10½	10½	10½
1890 - -	10 „ 10½	10½ „ 11½	11 „ 13	11	10½	11	10½
1891 - -	9½ „ 10	10 „ 10½	10½ „ 13	9½	9½	9½	9½
1892 - -	8½ „ 9	9½ „ 10½	10½ „ 12½	8½	9½	9	9½
1893 - -	8½ „ 9½	9½ „ 10½	10½ „ 12	10½	9½	8½	9½
1894 - -	9 „ 10	8½ „ 10½	9½ „ 12	10	9	8½	9½
1895 - -	9½ „ 10½	9½ „ 11	9½ „ 11½	12	8½	8	9½

In comparing these prices it should not be forgotten that in the case of the imported wools the values given are averages obtained by dividing the total value by the aggregate quantities received, and it is therefore impossible to distinguish the differences in the prices realised by different grades or qualities.



A closer analysis of the imports from the several Australasian colonies for the past five years has shown that the wool received from Victoria, New Zealand, and New South Wales is apparently of a higher market value than that produced in the other colonies.

While it is true that the imported wool constitutes over 70 per cent. of the total quantity consumed annually in the United Kingdom, it is not easy to estimate what proportion of the imported varieties comes into direct competition with the home product. For instance, the bulk of the wool received from Australasia is merino, a variety which, as has been already stated, can only indirectly affect the value of British and Irish wools. Apart, however, from the question as to whether there has been any serious displacement of the home-grown staple by the increasing volume of imports, the presence of so large a quantity of foreign wool in our markets must be a factor of some importance in the determination of the value of the wool produced in the United Kingdom. There is also another disturbing element which should not be lost sight of in considering the course of prices of an article like wool, and that is the influence of sudden changes of fashion. Such changes are usually of a temporary or seasonal character, but they frequently cause the market quotation of one or more varieties to deviate considerably from the general trend of prices. The effect of an influence of this nature may be seen in the rise in the average price of Lincoln wool, shown in the table above, from 10*d.* per lb. in 1894 to 1*s.* per lb. in 1895, which is said to have been caused by an increased demand for bright goods, worked up from lustre or long staple wools, which set in during the latter half of last year.

The actual effect of this sudden demand was much more strongly marked than appears from the annual average price; and the abrupt rise is well illustrated by the monthly averages of the price of Lincoln hoggs during 1895 given by the *Bradford Observer*. The monthly average of these had remained, until May, at the uniform price of 9½*d.* per lb.; but then the demand for bright goods was suddenly felt in the wool trade, and Lincoln hoggs rose to 12¼*d.* per lb. in June, and to 14½*d.* in July, while a further rise took place in September, and the maximum was reached in October 1895, when this class of wool was worth 16½*d.* per lb. After that date the price of lustre wools gradually fell away again.

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## AGRICULTURAL DEPRESSION IN GERMANY.

An earlier number of this Journal\* contained some information relating to the extent of agricultural depression in Germany, and to the measures of relief contemplated by the Imperial Government. In connection with this question, the Board of Agriculture have received through the Foreign Office copies of a memorandum, drawn up by the Ministry of Agriculture at Berlin, recapitulating and explaining the legislative and administrative measures introduced in recent years by the State Government for the encouragement of agriculture in Prussia.

In a *précis* of this document prepared by Mr. Whitehead, of Her Majesty's Embassy at Berlin, it is stated that while it may be the case that under exceptionally favourable circumstances, farming may still be continued at a profit in Germany, some idea of the average position of agriculturists in the kingdom may be gathered from statistics of mortgages incurred and paid off. These show that the indebtedness of land in the rural districts of Prussia has been steadily increasing, and that the annual excess of new mortgages over those paid off amounted during the last nine years to an average of 8,500,000*l*. This increase of indebtedness would lose a part of its significance if it could be shown that the value of land had increased, or that the money borrowed had been sunk in improvements. As regards town property this may be the case, but it is not so with agricultural land, the value of which has generally fallen, or, at least, remained stationary. Land would, it is held, have fallen to a more appreciable extent, were it not that the generally low rate of interest for money, the hope of better times, and the increased demand for country residences by persons who treat the possession of land as a luxury and not as an investment, have maintained it above its natural level. It appears that improvements in land or agricultural buildings have been made in very few cases, except by some co-operative associations, so that the greater part of the increased indebtedness has no doubt been incurred for purposes of unproductive expenditure, and implies an actual deterioration in the economic position of the landowners.

It is pointed out that among the causes of this lamentable state of things there is in the first place the current law of inheritance. This law gives equal claims to all the children and leads to burdens being put on the land for the allowances of the younger ones. Secondly, in prosperous times land was often bought with only small payments on account, the greater part of the purchase price remaining as a mortgage. While farming

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\* Journal of Board of Agriculture, Vol. II., No. 2, p. 145.

was profitable, these mortgages could gradually be paid off, but with profits decreasing more rapidly than the general rate of interest, it became necessary to raise fresh loans in order to pay the interest on the old ones, and for general purposes.

The primary cause of the decrease in farming profits is, however, the fall in the price of grain. According to the statistics for 1893, the principal cereal crops were grown on 54 per cent. of the arable land of Germany, or including pulse and the less usual grain crops, such as maize, on 60 per cent. Under these circumstances, it is obvious that the price of cereals is the determining factor for the prosperity of agriculture. With a few temporary fluctuations, the movement has in recent years been steadily downward, as shown by the following table of average prices for the kingdom of Prussia:—

Year.	Wheat (per Quarter).	Rye (per Quarter).	Barley (per Quarter).	Oats (per Quarter).
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1861-70 - - - - -	43 3	33 3	24 8	19 2
1871-80 - - - - -	47 3	37 1	29 8	22 5
1881-90 - - - - -	38 4	32 8	26 3	20 3
1891 - - - - -	47 0	44 8	30 6	23 2
1892 - - - - -	40 0	38 3	26 0	21 3
1893 - - - - -	32 3	29 0	25 6	22 7
1894 - - - - -	27 11	25 1	24 11	20 0
1895 - - - - -	29 2	25 7	21 9	17 0
1896 (January to June) - - - - -	31 11	26 0	22 8	17 3

Among the various opinions expressed as to the causes of this fall in price, Mr. Whitehead says that it has been attributed to (1) the facilities of transport by sea and rail which enable large quantities of grain of trans-oceanic origin to be put on the European market at a low rate; (2) to the appreciation of gold, and to the fact that its increased purchasing power depresses general prices, with the result that in countries with depreciated currencies, this depreciation acts as a premium on the exportation of cereals to gold countries; (3) to speculation on the Corn Exchange; and finally (4) to the fact that the principal corn-producing countries, being largely indebted to the gold countries, must pay the interest on their loans in cereals, and are, therefore obliged to accept even the lowest prices offered, in order to fulfil their obligations.

A conviction that profitable corn-growing is a necessary condition for the prosperity of German agriculture has led to various proposals for artificially sustaining the price of cereals. An increase of customs duties was found not to be possible until after the lapse of the commercial treaties. The Kanitz proposal for the State monopoly of the import of grain also came into conflict with the treaties, and presented insuperable difficulties in execution, in addition to which it was considered doubtful



whether the rise in price which it would occasion would really benefit agriculturists, it was therefore, rejected both by the Council of State and the Reichstag. The Government and the majority in the Reichstag were also agreed that measures for the rehabilitation of silver could only be carried out by international agreement and with the co-operation of England.

There were still greater objections to the proposals for the general division of land into small holdings. Although it is admitted that the peasant proprietor who grows corn for his own use only is not so much affected by its price in the general market, a change of tenure of this nature could not be carried out at once, and would therefore not afford relief in the present depression. Above all, however, it is considered necessary for social and political reasons to maintain in the greater part of Prussia a certain number of large and medium landowners.

The efforts of the Government have therefore been chiefly directed to such legislative and administrative measures for the relief of agricultural depression as tend to increase the productiveness of the land, and, further, to lessen the cost of production by reducing the cost of carriage and relieving the land from the burdens which have accumulated upon it.

Among such measures may be mentioned the action taken by the Government for the reform of the corn exchanges. For many years past agriculturists have pointed out the injurious influence of speculation on the exchanges upon the price of agricultural produce. A commission was appointed to inquire into the subject, and upon their report a Bill was laid before the Reichstag for the reform of the exchanges, providing among other things that the Federal Council should be empowered to make dealings in "futures and options" conditional, or to prohibit such dealings in certain classes of goods, and further to determine the quality of the grain to be delivered. The Reichstag passed this Bill with some alterations, but accorded the right to the State Governments of appointing representatives of agriculture and of the flour-milling industry on the governing boards of the corn exchanges, and totally prohibited futures and options in cereals and mill products.

A Bill was also introduced into the Reichstag, containing provisions calculated to restrict the operations of the larger establishments producing alcohol from molasses, and to afford further encouragement to the rural distilleries whose existence was threatened by the competition of the molasses distilleries. It also established a bounty on exportation, the funds to meet which were derived from a new graduated distillation tax, which increased with the size of the distillery, and was intended to restrict over-production. This Bill was adopted by the legislative bodies in all its principal points, and was promulgated as an amendment to the excise laws on the 16th of June 1895. It is stated to have had a good effect on the price of spirits, as, in spite of the cheapness of the raw materials and of a large production, prices have shown a moderate upward tendency.

As regards the sugar tax law, the details of which have been explained in a previous number of the Journal,\* a provisional law was passed on the 9th of June 1895, maintaining the then existing bounties up to the 31st of July 1897. Later on, as the negotiations with Austria for the abolition of the bounties had failed, the Imperial Government resolved to bring about a complete reform of the taxation of sugar on the same lines as in the case of spirits, with the object of maintaining the sugar industry as subsidiary to agriculture. For this purpose an Act was passed on May 27, 1896, which raised the bounties so as to enable German sugar to compete in the general market; restricted over-production by limiting the output of the factories; and imposed a graduated tax on production which enabled the smaller factories to hold their own.

As a further measure of relief, the law of the 14th of April 1894 substituted for the drawback on foreign grain re-exported from Germany, the identity of which was proved, a system of permits for the importation of an amount of grain equal to the quantity exported. This legislation is said to have effected a considerable increase in the exportation of cereals, and to have caused the difference in price between home-grown and imported grain in the eastern provinces to correspond to the amount of the import duty.

The duration of customs credit granted in mixed private bonded warehouses for foreign grain has been reduced from six or seven to three or four months. The total abolition of this credit and of the bonded warehouses is under consideration.

A number of minor measures and enactments in the interests of agriculture have been introduced or are in contemplation.

A Bill has been prepared regulating the sale of chemical manures, feeding stuffs, and seeds. An amendment to the Poor Law, passed on the 12th of March 1894, alters the conditions of relief favourably to the rural communes.

As regards the question of agricultural labour it is proposed to regulate the labour agencies by means of a licensing system with a view to prevent breaches of contract.

In order to remedy the dearth of labour in the eastern provinces the employment of foreign labour has been permitted under certain restrictions. The foreign labourers come chiefly from Russian and Austrian Poland; their number in 1892 was 19,505, and in 1895 it was 27,249.

In connexion with this question it may be observed that the last census of the German Empire shows that while in 1882 over 19,200,000 persons, or 42·51 per cent., of the population were engaged in agriculture and kindred pursuits, their number in 1895 only amounted to about 18,500,000, or 35·74 per cent. of the population.

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\* Journal of the Board of Agriculture, Vol. II., No. 3, p. 300.

With reference to the Margarine Law of July 12, 1887, it is stated that repeated complaints had been raised by agriculturists that its provisions were not sufficiently stringent to prevent unfair competition by substitutes for butter. These complaints were justified by the fact that whereas in 1887 there were only 45 margarine factories in Germany with an annual output of about 15,000 tons, worth about 900,000 $\text{L}$ ., there are now 73 such factories with an output of about 90,000 tons. The Imperial Government consequently prepared a Bill intended to remedy the defects of existing legislation on the subject, chiefly providing for a more accurate legal definition of margarine, a better supervision of its manufacture, and severer penalties for infractions of the law. The Reichstag, however, amended this Bill in a manner which made it impossible for the Federal Council to pass it. Besides other alterations, two provisions were added, one prohibiting the colouring of margarine so as to make it resemble butter, the other prohibiting the sale of butter and margarine in the same retail establishment. Both these provisions went beyond the original scope of the Bill, and could not be accepted by the Government. Since the rejection of this Bill the Prussian Government have issued instructions to the administrative authorities that the provisions of the existing law of July 12, 1887, should be more strictly enforced.

With regard to the redistribution of direct taxes the communal taxation of real property in this year shows that landed property has, in a large number of cases, experienced a considerable alleviation in rates and taxes.

Further indirect assistance to agriculture is mentioned, consisting in increased State contributions towards the maintenance of elementary schools, and in certain reductions of legal fees and inland revenue stamp duties.

A sum of 650,000 $\text{L}$ . has been placed at the disposal of the Government for promoting the construction of light railways.

Great concessions have been made in railway rates on agricultural produce, and the rates for manures, potatoes, beet-root, &c. under the "raw materials" tariff have been reduced much below even the cheapest ordinary goods tariff.

For the construction of co-operative grain depots, which was also recommended by the Council of State, a sum of 150,000 $\text{L}$ . was voted under the Law of June 3rd, 1896.

Arrangements have been agreed upon by the various Ministries concerned for the purchase direct from farmers of agricultural produce required for the use of the various administrative departments of the State. In districts where small holdings are the rule this is done through the existing co-operative associations.

The whole question of inheritance of landed property in Prussia is under consideration. A law was passed in June this year regulating the succession on State-assisted small holdings,



by which the further subdivision of these small properties is prevented and arrangements are made for paying off co-heirs by instalments.

The establishment of chambers of agriculture in many of the provinces or districts of Prussia has also been provided for by a law passed in June 1894. They are to watch over the general interests of agriculture and forestry in their districts, and to encourage all measures calculated to raise the economic condition of landowners. They constitute consultative bodies to which the Government can refer any questions touching the interests of agriculture.

The sums of money placed at the disposal of the Prussian Ministry of Agriculture have shown an increase in the last 15 years of about 68 per cent. The amount allocated "for the general advancement of agriculture" was 635,000*l.* in 1882-83, 865,000*l.* in 1892-93, and 1,070,000*l.* in 1896-97.

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## CATTLE-RAISING INDUSTRY IN THE UNITED STATES.

In a report to the Foreign Office on the United States cattle-raising industry in 1896, and on the export of cattle and beef to Great Britain, Mr. O'Beirne, Third Secretary of Her Majesty's Embassy at Washington, states that the conditions of cattle-raising in America have undergone considerable alteration during the past 15 years. Examining the statistics of animals in the United States, as given by official estimates, it appears that the number of oxen and cattle other than milch cows increased rapidly from 1870 until 1885; but that after this date the increase slackened, and there has been a very considerable decline since the maximum was reached in 1892. The number of cattle in the United States at different periods has been approximately as follows:—

*Number of Cattle in the United States.\**

Date.					Milch Cows.	Oxen and other Cattle.
1st January 1870	-	-	-	-	10,095,000	15,338,000
" 1885	-	-	-	-	13,904,000	35,513,000
" 1892	-	-	-	-	16,416,000	37,651,000
" 1893	-	-	-	-	16,424,000	35,954,000
" 1894	-	-	-	-	15,487,000	36,608,000
" 1895	-	-	-	-	16,504,000	34,364,000
" 1896	-	-	-	-	16,137,000	32,085,000

This development of the industry is attributed by Mr. O'Beirne to the following causes:—Prior to 1870, a herd of cattle on a Texas ranch was worth, roughly speaking, the price of the hides and bristles. The opening up of the country by railways, however, suddenly increased the value of these herds, so that a rush into the business of cattle-raising ensued, and ranching extended rapidly also in other Western States. But with the further settlement of the country, free ranches became scarcer, and the cost of raising the herds was augmented by the cost or rent of the land, by taxation (from which the earlier

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\* The number of "oxen and other cattle" shown for 1885 is the result of a special investigation; the other returns are based on estimates of the increase or decrease in the various districts each year; an actual count being only made during the general census of the population. The total returned as milch cows consists chiefly of cows reserved exclusively for the dairy, which generally belong to breeds unsuitable for the beef market, and the numbers of which have consequently little influence on the total number of beef cattle. Thus the largest cattle-producing States, such as Texas, are returned as having, relatively, the smallest number of milch cows. The heading also includes a large (but not ascertainable) proportion of cows used for breeding meat-cattle, the rest being shown under "oxen and other cattle."

ranchers were exempt), and by the increased cost of the staff required to control the herds. Accordingly the number of animals in the earlier ranching States is found to have declined, while further west (but still east of the Rocky Mountains) there still remains a large area of free land, and the industry is more profitable. The ranching business appears to have attained its high-water mark about 1885; and as the regions became more settled, the system gave way to less primitive and economical methods. At the present day, of the chief cattle States lying west of the Mississippi, Kansas and Nebraska have passed entirely out of the "free range" stage, and Colorado may be classed in the same category; a limited extent of range survives in Texas, partly on the borders of New Mexico; while the ranching business is still in vigour in the more northerly States of Wyoming, Montana, and North Dakota. In Missouri and Iowa it has never existed—at least, of recent times. The total number of cattle in the two chief ranching States, Montana and Wyoming, is under 2,000,000.

It is important to take note of the extent of the decrease shown in a limited number of Western States, in which the cattle industry of the whole country is largely concentrated. The following ten States—Texas, Illinois, Iowa, Indiana, Missouri, Kansas, Nebraska, Montana, Wyoming, and Colorado—all with the exception of Illinois and Indiana lying west of the Mississippi—provide some  $17\frac{1}{2}$  millions oxen and other cattle, or considerably more than half the total number returned for the 48 States and Territories. Or, leaving out of consideration the Pacific Coast States, which may be regarded, as far as the cattle industry is concerned, as forming a region apart, the ten States named above supply over  $\frac{17}{30}$  of the oxen and other cattle in the whole country east of the Rocky Mountains.

This remarkable concentration of the industry in a small number of Western States has become possible through the agency of the great slaughtering and packing houses which have grown up in Chicago, Kansas, and other western cities, and have given the "dressed meat" trade its present enormous importance. The bulk of the western cattle are bought from the fatteners by these firms, butchered and dressed on an immense scale, and at a great saving of expense. The dressed beef is distributed through the country in refrigerator railway cars, and sold to the consumer in local meat stores, which have largely superseded the old-fashioned butchers' shops. The result has been that the cattle-raising industry of all but the most southerly of the Eastern States has been seriously affected by the competition of the western stock-growers, who, though their own expenses have been on the increase, still retain a great advantage in that respect over their eastern competitors.

In the ten States enumerated above, which have thus come to represent to so large an extent the cattle industry east of the Rocky Mountains, the estimated decrease of "oxen and other cattle" since 1892 has been from 21,250,000 to 17,400,000, or



nearly 4,000,000. In the great breeding State of Texas the decrease is from 7,000,000 to 5,500,000. Indiana has lost about a fifth, Illinois over one-sixth. The only one of these States showing a slight increase is Montana, where ranching is in full vigour; while the corn-growing and "feeding" States, such as Missouri, Kansas, and Nebraska, all show some decrease.

Reviewing the past few years' history of the cattle industry, Mr. O'Beirne says that it is difficult to avoid the conclusion that what has been mainly responsible for the decrease in the numbers of cattle is the reduction in the profits of cattle-raising. In the five years preceding 1885 prices were high, and the ranching business, with its tempting profits, had a wide extension, the total number of cattle increasing from 35,000,000 to 49,000,000. During the five following years, prices of all classes of cattle fell by as much as 35 per cent., partly from causes affecting the price of commodities in general, but chiefly as the result of the excessive supplies of cattle thrown on the market with the rapid development of ranching. At the same time the ranching area was rapidly diminishing, and ranching was being replaced by more expensive and less profitable methods of cattle-raising. A corresponding change followed in the results shown by the industry, although not until some years later. The number of cattle continued to increase, although slowly, until 1892; but since then low prices and small profits have had their effect in a rapid and continuous diminution of the stock.

In further support of this conclusion, Mr. O'Beirne brings forward several estimates of the cost of raising and fattening steers in various States, the net result of which is to show that in order to recover the outlay expended on the animals, the price obtained must be such as is only secured in the case of animals of the highest class at Chicago. In other words, that the business of fattening cattle for the butcher yields a profit under specially favourable conditions, and notably where the fatterer grows his own feed; but that a large proportion of the feeding is, at present prices, necessarily carried on at a loss.

In view of the decreasing supply of cattle for meat, and of the steadily increasing demand for these animals, the question of the future capability of meeting this demand presents itself for consideration. Mr. O'Beirne estimates that the yearly consumption of beef by the States is equivalent to over 7,500,000 head of cattle. Adding to this the 300,000 head exported alive, the export of fresh beef representing another 300,000 head, and of salt and canned beef representing 200,000, the total number of cattle which the United States are annually called upon to slaughter would appear to amount to over 8,300,000 head. To meet this demand there are 32,000,000 "oxen and other cattle." Deducting from the total the number which must be set apart as breeding cows, or on account of losses from disease and climatic and other causes, and assuming that the average age of killing is only three years, Mr. O'Beirne concludes that not more than one fourth of the number, at the outside, are annually available for the butcher, and consequently that the

supply has already fallen so low as to be unequal to meeting the annual demand without further depletion of the herds.

Discussing the causes of the heavy supplies, and very low prices at all the chief cattle markets, as well as the large number exported, during the first five months of the present year, Mr. O'Beirne considers that these are only temporary features. It was to be anticipated, he says, that the present year should be marked by an abundance of supply of finished beeves; because the scarcity of corn feed in 1895, consequent upon the failure of the corn crop of 1894, had the result that a large number of cattle, which in the ordinary course should have been fattened in 1895, were instead held over until the following year. That the number of mature cattle due for 1895 thus reserved until 1896 was large, appears from the falling off in the receipts for 1895 of the four chief western markets (Chicago, Kansas City, St. Louis, and Omaha). The receipts at these markets for the first five months of the current year show, however, only an inconsiderable increase over the receipts for the same months of 1895, and they were much below those in the same period of 1894.

The supposition that the existing abundance of finished beeves is to a certain extent a temporary feature of the trade, the result of the scarcity of corn in 1895, receives some confirmation from the fact that, while supplies of mature cattle have been heavy and prices low, "stockers and feeders" on the other hand have been comparatively scarce and dear.

The future course of prices in the American markets must be determined by the operation of the two factors discussed above—a stationary, or possibly diminishing, supply, and a steadily increasing demand. The falling off of the receipts in 1895 had a most marked effect in raising prices; and, with the receipts for the current year at the western markets below the receipts in 1894, and only slightly heavier than in 1895, it might have been expected that prices should only have been slightly lower than last year. Yet they have, as a fact, fallen, and are now little better than in 1894, as will be seen from the following table:—

Class of Cattle.	Price per Cwt.														
	30 March 1894.		29 March 1895.		27 March 1896.										
	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>							
Extra prime steers -	21	0	—	22	2	29	5	—	30	4	19	7	—	20	6
Export and shipping steers, average 1,450 —1,600 lbs.	20	1	—	21	0	26	10	—	28	6	18	2	—	19	2
Export and shipping steers, lacking quality.	18	2	—	19	7	25	8	—	26	7	16	10	—	17	9
Good dressed beef and shipping steers, 1,150 —1,400 lbs.	16	4	—	19	7	24	0	—	28	11	17	3	—	18	8
Fair to medium grades -	14	8	—	17	0	21	0	—	25	8	15	10	—	17	3

These low prices Mr. O'Beirne explains by a great falling off of the American consumption, and this is to be attributed to general depression of trade.

The export of cattle and beef to Great Britain grew to its present volume in the period 1885-92, when the rapid development of the ranching industry had given the country an enormous accession to its normal supply of cattle, when the western markets were flooded with cheaply raised stock, and American prices were correspondingly depressed. The export of live cattle to British ports, which in the five years preceding 1885 had averaged some 100,000 head, more than trebled itself between that year and 1892, when it reached a total of 378,000. Similarly, the export of fresh beef rose from 111,000,000 lbs. in 1885 to 219,000,000 lbs. in 1892.

The following table shows the export to Great Britain of live cattle and of fresh beef during the past 10 years:—

Years ending June 30th.							Cattle.	Fresh Beef.
							Head.	1,000 lbs.
1886	-	-	-	-	-	-	114,193	97,149
1887	-	-	-	-	-	-	96,960	81,917
1888	-	-	-	-	-	-	124,562	93,466
1889	-	-	-	-	-	-	193,167	137,286
1890	-	-	-	-	-	-	360,589	171,032
1891	-	-	-	-	-	-	345,797	192,456
1892	-	-	-	-	-	-	378,167	219,103
1893	-	-	-	-	-	-	280,996	205,911
1894	-	-	-	-	-	-	345,734	193,331
1895	-	-	-	-	-	-	305,068	190,736

The export of live cattle which, as has been seen, rose rapidly in the years preceding 1892, has since been somewhat below the number then reached, and has been subject to extreme variations. The exports both of live cattle and of fresh (chilled) beef show a considerable increase during the first five months of the current year; but this, and the great falling off in 1895, must be ascribed to the same factors as caused the increase in the receipts at the American cattle markets, namely, that the scarcity of feed last year threw a portion of the 1895 cattle into 1896.

The cattle exported alive to Great Britain are, for the most part, three- and four-year-olds, selected from the highest class of heeves raised in the cattle States west of the Mississippi and marketed in Chicago. They are there bought by the exporting firms, and shipped almost entirely to London, Liverpool, and Glasgow, where their meat sells slightly below the corresponding class of English beef. The total of the exporters' expenses between the Chicago and the English market varies from 4*l.* to 5*l.* per head, according to the rates of ocean freight. The



following is given as an approximate estimate of the various items of expense:—

	Per Head.	
	s.	d.
Railroad freight from Chicago to New York	-	29 2
Feed on ocean - - - - -	-	12 6
Ocean freight (about) - - - - -	-	37 6
Insurance - - - - -	-	3 6½
Attendance - - - - -	-	4 2
Yardage, commission, &c., on English side	-	12 6
Incidental - - - - -	-	4 2
Total - - - - -	£5	3 6½

It is calculated, making due allowance for loss of weight on the voyage, that a difference of some 3*d.* to 3½*d.* per pound between the Chicago and English prices (live weight, and estimated dressed weight respectively) is just sufficient, and estimated the exporter to recover his outlay with a fair profit, supposing the shipment to be of heavy cattle; and the prices in the two markets tend in the long run to adjust themselves in this relation. A difference in price of more than 3½*d.* has an immediate effect in stimulating purchases for export at Chicago; a very slight advance of prices at Chicago, or decline at Liverpool, bringing the difference in price below 3*d.*, is sufficient to make exportation a losing business. The exporter having generally been forced to engage ocean freight some months in advance has then to choose between sacrificing his freight or shipping at a certain loss. Thus the business had admittedly been one of great uncertainty and risk.

It seems still a matter of doubt whether the larger profits are secured by exporting the cattle alive or in the form of chilled beef. The United States Secretary of Agriculture in his report for 1895 says: "It appears to work out more profitably to transport the live cattle. They are carried on parts of the ship that would otherwise be unoccupied. They do not require such special fittings and appliances as to debar the vessel from carrying other cargo when cattle are not available."

## FARMERS AND THE INCOME TAX.

The Board of Agriculture have, from time to time, in the pages of this Journal and by the issue of leaflets, directed the attention of persons occupying lands for the purpose of husbandry only to their statutory and other rights in regard to the assessments made upon them to income tax. A memorandum on this subject was originally issued in 1893, but in view of the alterations in the mode of assessment effected by the provisions of the Finance Acts of 1894 and 1896, it has been considered desirable to give publicity to the following revised memorandum, prepared by the Board of Inland Revenue, which sets out fully the principles upon which the assessments are now made, and the various rights of appeal and relief which exist.

By the exercise of the option (referred to in paragraph No. 4 of the Memorandum) of being dealt with according to the rules of Schedule D. of the Income Tax Acts, occupiers of land for the purpose of husbandry only who have made no profits therefrom on the average of the three years preceding the year of assessment, or whose aggregate income from every source does not exceed £160 a year, are still able to avoid assessment to income tax in respect of such occupation, provided, of course, that the returns they make on the form which will be supplied to them by the Surveyor of Taxes for assessment under Schedule D. are regarded as satisfactory by the Commissioners of Taxes. In such cases no appeal to the Commissioners is requisite, since no assessment is made, and no question arises involving payment and subsequent repayment of the tax.

Where assessments are made under Schedule B. the law provides ample means of obtaining relief if at the end of the year the farmer has made no profits, or if his profits have fallen short of the sum assessed, but by reason of the fact that the Commissioners of Taxes require the production of accounts before they issue a certificate for repayment, the process is necessarily somewhat troublesome to the farmer. It is for this reason that the making of a return for assessment under Schedule D. would in many cases be a simpler and more advantageous proceeding.

In any case of difficulty arising under any of the heads mentioned in the Memorandum, the Board recommend that application for advice and assistance should be at once made to the local Surveyor of Taxes.

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MEMORANDUM.

1. Income tax is chargeable on the annual value of lands under Schedule A. in respect of the ownership, and under

Schedule B. in respect of the profits derived from the occupation. The rate of tax for 1896-7 under Schedule A is 8*d.* on the annual value, less certain deductions, and under Schedule B. it is the same rate of 8*d.* on one-third of the annual value without deduction. (Finance Act, 1896.)

2. "Annual value" means the rack rent at which lands are worth to be let by the year, that is, the yearly rent which a tenant might reasonably be expected, taking one year with another, to pay for the lands, if the tenant undertook to pay all usual tenant's rates and taxes and if the landlord undertook to bear the cost of repairs and the other expenses necessary to maintain the property in a state to command that rent. The Finance Act of 1894 authorises an allowance from the assessment under Schedule A. of one-eighth part of the annual value of the lands (inclusive of farm-houses, and other buildings if any) as determined by the Commissioners of Taxes for the district.

3. Under the Finance Act of 1896, any owner or other person in receipt of the rent of any lands, although not the occupier thereof, has the same right of appeal under Schedule A. as if the assessment were made upon him.

4. Any person occupying lands for the purpose of husbandry only may elect to be assessed under Schedule D. on the average profits of the three preceding years instead of being assessed under Schedule B. on one-third of the annual value. The election of such person to be assessed under Schedule D. must be signified by notice in writing addressed to the Surveyor of Taxes for the district on or before the 5th of June in each year. In Scotland the time within which notice must be given to the Surveyor is extended to 5th of August.

5. Meetings of the Commissioners of Taxes are held annually between the 29th of September and the 25th of December for the purpose of hearing appeals under Schedules A. and B. and D. In England and Wales intimation of the dates of these meetings is given by notice affixed to church and chapel doors, and any person aggrieved by the assessments made upon him may appeal, on giving 10 days' notice of his intention either to the local assessor or to the district Surveyor of Taxes. In Scotland notice of intention to appeal should be sent to the Surveyor of Taxes for the district within 10 days after receipt of the notice of assessment, and thereafter intimation will be given of the place and date of meeting of the Commissioners.

6. The Commissioners also hold meetings after the expiration of the year of assessment for the purpose of hearing appeals by persons who have paid income tax in the previous year under Schedules B. or D. on amounts in excess of the actual profits made in that year.

7. Persons who desire to appeal with a view to obtain repayment on the ground of loss or diminution of profits must apply to the Surveyor of Taxes within six months from the 5th of April for information as to the time and place of meeting of the Commissioners.



8. Persons who have sustained a loss by farming operations may obtain repayment of the tax paid under Schedules B. or D., and also of a proportionate amount of the tax paid in respect of their incomes (if any) derived from sources other than from the occupation of land.

9. A printed form of account of profit and loss for the use of farmers has been provided by the Commissioners of Inland Revenue, and may be obtained on application to any Surveyor of Taxes.

10. The Commissioners of Inland Revenue have instructed their officers not to object to the admission of farming accounts made up annually from Michaelmas Day instead of from Lady Day.

11. Under the Finance Act of 1894 any person whose total Income from all sources is proved not to exceed 160*l.* is exempt from the payment of Income Tax. Where the Income from all sources exceeds 160*l.*, but does not exceed 400*l.*, the person is entitled to claim an abatement of duty on 160*l.* Where the Income from all sources exceeds 400*l.*, but does not exceed 500*l.*, an abatement can be claimed of the duty on 100*l.* Where owners of land make any claim of exemption or abatement, the annual value of the lands assessed under Schedule A. should be taken (for the purpose of the claim) to be the amount of the assessment after deduction of the allowance of the one-eighth mentioned in Paragraph 2. For the purpose of claiming exemption or abatement, the income arising from the occupation of land is (since the passing of the Finance Act of 1896) to be taken at one-third of the annual value.

12. *Remission of Rent.*—Where temporary abatements or remissions of rent have been allowed, a reduction or repayment of duty may be claimed in respect of the amount remitted for each complete year ending on the 5th of April. This allowance may be claimed under both Schedules (A. by the landlord, B. by the tenant) on a special form of claim which will be supplied by the Surveyor of Taxes. When the remission has the effect of bringing the total income of the tenant to an amount not exceeding 160*l.* the whole of the duty paid or payable under Schedule B. will be repaid or allowed to the tenant.

13. Further information on any of the points mentioned in this Memorandum may be obtained from the Surveyor of Taxes for the district, who will take steps to afford proper facilities to all persons who desire to appeal with the object of obtaining relief from or the repayment of Income Tax.

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## REPORTS ON FOREIGN CROPS.

## CROPS IN THE UNITED STATES.

The October report of the Statistician of the Department of Agriculture of the United States contains the preliminary estimates of the results of the past harvest in that country. The quantities are shown in Winchester bushels. The returns are stated to have indicated an average yield per acre of wheat of about 11·9 bushels as compared with 12·5 bushels last year and 13·1 bushels in 1894. The estimated area under the crop, as reported by the Statistician in June last, appears to have been 34,619,000 acres, so that a yield of 11·9 bushels per acre would represent a total production of 411,966,100 bushels, as compared with a yield of 467,103,000 bushels last year.

The average yield per acre of oats, as reported in October, was 24·3 bushels on an estimated acreage of 27,543,000 acres. These figures would indicate a total yield of 669,294,900 bushels, compared with a production of 824,444,000 bushels last year. The returns as to the quality of this grain are stated to represent a general average of 74·9 against 91 last year.

Rye has been harvested from an estimated acreage of 1,831,744 acres; the average yield is reported to have been 13·3 bushels per acre, so that the total production in the harvest of 1896 would appear to have been 24,362,195 bushels.

According to the June report of the Statistician, the area sown with barley was about 2,967,000 acres. The yield per acre is stated to have been 25·6 bushels, and the total production works out to 75,955,200 bushels.

The average yield of maize per acre is stated in the November report of the Statistician to have been 27·3 bushels against 26·2 bushels last year. It is a larger average than in any of the preceding six years, and indicates the largest maize crop ever grown. The yield in the principal maize States varies between 26·3 bushels in Missouri and 40·4 bushels in Illinois. The number of acres under this crop was estimated in a previous report of the Statistician at eighty one million, the crop would therefore appear to have amounted to a total production of 2,211,300,000 bushels against 2,151,139,000 bushels last year.

The average yield of buckwheat per acre is 19·7 bushels against 20·1 last year.

The average indicated yield of potatoes is 86·8 bushels per acre this year against 100·7 in 1895.

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## CROPS IN FRANCE.

The official preliminary estimates of the yields of the principal cereals in France in the harvest of 1896 have been published in the *Journal Officiel*.

The figures of the acreage and production converted into English equivalents are shown in the following table, together with the estimates for 1895:—

Crops.				1896.	1895.	1896.	1895.
				Acres.	Acres.	Bushels.	Bushels.
Wheat	-	-	-	17,103,634	17,294,122	326,989,019	329,911,299
Barley	-	-	-	2,172,338	2,199,997	47,866,362	46,790,524
Oats	-	-	-	9,678,211	9,803,274	253,196,982	260,913,821
Rye	-	-	-	3,728,438	3,787,823	67,130,415	69,210,963

## CROPS IN ITALY.

The official preliminary forecast of the yield of wheat, barley, and oats in Italy in 1896 has been published in the *Bollettino di notizie Agrarie*.

Wheat is estimated to have yielded 133,752,663 bushels in 1896 against 114,122,173 last year, an increase of about 17 per cent. The yields both of barley and oats compare favourably with those of the previous year; in the case of barley the estimated yield is 19¼ per cent. in excess of the production of 1895, the figures being 8,591,258 bushels against 7,204,252 bushels, while the oat crop is estimated to have yielded 21,577,050 bushels; in 1895 it yielded 18,599,724 bushels.

## CROPS IN ROUMANIA.

The official preliminary estimates of the acreage and yield of the principal cereal crops in Roumania in 1896 have been published in a recent number of the *Curierul Financiar*, and are reproduced in the table below, together with those for 1895:—

Cereal.				1896.	1895.	1896.	1895.
				Acres.	Acres.	Bushels.	Bushels.
Wheat	-	-	-	3,717,868	3,551,860	68,993,925	66,384,725
Rye	-	-	-	601,199	537,373	11,839,025	8,968,025
Barley	-	-	-	1,501,019	1,365,045	30,804,675	21,696,400
Oats	-	-	-	696,219	668,184	14,265,075	10,054,000



Maize is estimated to have yielded 20·04 bushels per acre. In consequence of the dry weather the crop has been harvested in good condition, and the quality is much superior to what was expected. The early sowings of maize under good cultivation have yielded a return much above the average.

### CROPS IN MANITOBA.

The information relating to the acreage of crops, which was given in the September number of the Journal, may now be supplemented by the details contained in the later official returns. It appears that the preliminary estimates of the yield of wheat were too high, and the crop is now estimated to have amounted to 14,371,000 bushels, or about 4,000,000 bushels below the earlier estimate. The yield of oats is estimated to have amounted to 16,633,222 bushels, or an average of 37½ bushels per acre, whilst the out-turn of barley amounted to 3,696,460 bushels, or 28·9 bushels per acre. It is stated that the season has been specially favourable for pasture and hay, the yield of prairie hay having been estimated at 1·9 tons per acre, and cultivated grasses at 1·7 tons per acre. Farmers throughout the province are, however, providing a supply of timothy and brome grass, which, it is said, can be profitably cultivated in all parts of the province.

### CROPS AND LIVE STOCK IN ONTARIO.

The official estimates for 1896 of the cereal and other crops in the province of Ontario have been published by the Department of Agriculture at Toronto. The reports of the final out-turn of the winter wheat crop were variable and conflicting, but, on the whole, rather under than over the average. The prospects of the barley yield were good, while rye was reported to be quite up to the average in quality. The following table gives the official estimates of area and yield:—

Crops.			1896.	1895.	1896.	1895.
			Acres.	Acres.	Bushels.	Bushels.
Winter wheat	-	-	876,955	743,199	14,516,088	14,155,282
Spring wheat	-	-	255,361	223,957	3,677,757	3,472,543
Barley	-	-	462,792	478,046	12,303,091	12,090,507
Oats	-	-	2,425,107	2,373,309	84,974,508	84,697,566
Rye	-	-	148,680	120,350	2,353,001	1,900,117
					Tons.	Tons.
Hay and clover	-	-	2,426,711	2,537,674	2,260,240	1,849,914

The area under potatoes was estimated at 178,965 acres, and a fair yield was expected.

The yield of apples in the present season is reported to have been greater than for many years past, and the fruit is said to be remarkably free from insect pests. Other kinds of fruit appear to have been quite up to the average, and, taken altogether, the summer of 1896 is considered to have been a record season in respect of fruit supply.

The total number of cattle of all kinds in the province on July 1st was returned at 2,182,000, of which 920,000 were milch cows, an increase of about 32,000 over the previous year. Sheep showed a decrease, the numbers being 1,849,000 against 2,023,000 in 1895. Pigs numbered 1,269,600 as compared with 1,299,000 in the previous year. Live stock were reported to be generally in a healthy condition.

The *Bulletin* contains a reference to the attack of the "Army worm," from which it appears that in seven counties of Ontario this insect occasioned considerable loss, but in many of the others the damage was slight, as the caterpillars were too late in arriving to do much harm, owing to the advanced condition of the crops attacked. Some observers reported a loss of 50 per cent. in oat fields, but in most of the other cases the damage was comparatively slight.

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#### CROPS IN AUSTRIA.

It appears from the report of the Austrian Ministry of Agriculture for October last, as published in the *Wiener Landwirthschaftliche Zeitung* of the 31st of that month, that the various Austrian districts could, so far as concerns the four chief cereals (wheat, rye, barley, and oats), be divided into two main groups. In the first of these, comprising the north-west, west, and south of the empire, the harvest could only be described as rather under average. In the second (north-east) group, however, the harvest must be considered to be one of the best which had been experienced for a long series of years.

Much disease was present among the potatoes, and there were complaints of the small size of the tubers; in Galicia, however, prospects were more encouraging, yields of 4 to 6 tons per acre being reported. Sugar-beet had improved both in size of root and in sugar-contents, but there were reports of poor harvests in some localities, notably in South Bohemia. Flax had suffered from the rain. The vintage, with few exceptions, had turned out badly, so far as it was completed.

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#### CROPS IN HUNGARY.

Estimates of the yield of wheat, rye, barley, and oats in Hungary in 1896 were given in the September number of this Journal, and the later reports of the condition of cereals in that

kingdom, reproduced from official sources in the *Wiener Landwirtschaftliche Zeitung*, show that of this year's harvests, buck-wheat and millet were satisfactory, but maize was behindhand in many places, and the yield proved to be considerably below expectations.

Hemp, flax, tobacco, and roots had all given more or less satisfactory results. Potatoes had suffered much from the rain, there being a great deal of disease over the whole country. Pasture, under the influence of the wet weather, was good; while vines had been much damaged, and the prospects of a good vintage were steadily becoming poorer.

### CROPS IN BELGIUM.

The official estimate of the Belgian harvest of 1896 indicates the crops to have been generally good, and, with the exception of oats, of which the yield was considerably less than the mean for the two preceding years, to have given a return very similar to that of 1895. The quality is declared to have been good on the whole.

The following table shows the average yield of the four chief cereal crops during the last five years:—

Year.						Bushels per Acre.			
						Wheat.	Rye.	Barley.	Oats.
1892	-	-	-	-	-	29·7	31·4	42·0	42·6
1893	-	-	-	-	-	26·6	27·1	37·0	32·6
1894	-	-	-	-	-	27·5	29·4	39·2	44·6
1895	-	-	-	-	-	28·0	29·1	41·4	47·4
1896	-	-	-	-	-	29·2	29·7	40·1	38·0

On the assumption that the acreage under wheat and rye amounted to 1,358,500 acres, the yield of these two principal cereal crops in Belgium is estimated at 40,150,000 bushels, or 1,375,000 bushels more than the corresponding quantity produced last year. If the present yield be taken to represent the quantity of available home-grown cereal products, and without considering the quantity required for seed and for feeding, or the yield from other crops, there is an estimated deficiency of cereal food in Belgium for the season 1896-97 amounting to 9,625,000 bushels.

### CROPS IN GERMANY.

The returns prepared in the Imperial Statistical Office at Berlin give preliminary estimates of the results of the harvest of wheat, barley, and rye in Germany in the season of 1896.



Wheat has yielded better than last year, the harvest of 1896 representing, for autumn wheat, an out-turn of 26·7 bushels per acre, and for spring wheat 22·1 bushels per acre. Last year the preliminary estimates were 24·8 bushels and 20·5 bushels respectively. The harvest is thus considerably above the average. On the whole, the central districts—especially Saxony and Hesse—appear to have yielded the best results; in Prussia there are large variations, good yields being reported from some districts, while adjacent regions may have had poor crops. In Southern Germany the harvest was uniformly inferior, the average yield of autumn-sown rye for the whole of Bavaria and Wurtemberg being 20·3 bushels per acre.

The barley harvest would appear to be slightly below that of 1895, although over average in quantity, the estimated out-turn being 29·4 bushels per acre. But excess of rain has done considerable damage to this grain, and much of it cannot be utilised for brewing. The quantity yielded appears to be distributed in different districts almost exactly like the wheat harvest: Hesse and Saxony show the heaviest returns, while Wurtemberg reports an average of only 21·7 bushels, and Bavaria one of 24·6 bushels per acre.

The yield of autumn rye, to judge by reports received of the earlier threshings, varies in Prussia from 16·8 to 30·2 bushels per acre, with an average of 20·8 bushels; spring rye gives from 8·7 to 21·5 bushels, with an average of 12·8 bushels per acre. In Bavaria the average for autumn rye is 21·1 bushels, and for summer rye 15·0 bushels per acre. It must be borne in mind that the final yields may be somewhat below those just given, as in some cases the estimate is based upon seed corn, that is to say, upon the best samples.

The potato crop in Prussia was expected to be a little under average, as there was a good deal of disease. From clover and lucerne an average yield appeared probable.

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### CROPS IN RUSSIA, 1896.

The Board have received, through the Foreign Office, a report drawn up by Mr. John Michell, Her Majesty's Consul-General at St. Petersburg, on the results of the Russian grain crop of 1896, as estimated by the Ministry of Agriculture and Imperial Domains upon the basis of communications received from 600 of its correspondents in the various agricultural districts of the Empire.

It would appear that the deficiency of the yield in European Russia alone of all the grain crops of this year amounted to 37,430,678 cwts. Adding to these figures the short yield of the grain crops in the provinces of the Vistula and Cis-Caucasia

the total deficiency, as compared with the average yield, will extend to 48,229,714 cwts.

The following statement shows in detail the yield of the grain crops in the Black and non-Black Soil Provinces of European Russia :—

Cereal.	Average, 1883-95.	In 1896.
	Cwts.	Cwts.
Rye - - - - -	321,746,464	312,289,721
Wheat, winter sown - - - - -	41,130,000	36,438,750
„ spring sown - - - - -	93,574,286	85,085,357
Oats - - - - -	173,901,214	169,725,857
Barley - - - - -	70,961,143	66,620,571

The flax and hemp crops proved to be not wholly satisfactory, and in the south they mostly yielded poor results owing to drought and disease.

The potato crop was generally a good one, with the exception of the new Russian Southern Provinces, where the yield was a poor one.

The beetroot crop promised an average yield in quantity, being also good, according to some reports, in quality. The approximate yield is reckoned at 5,515,914 tons, as compared with 5,137,096 tons obtained in 1895.

The Official Messenger of Finance, *Viestnik Financov*, contains the preliminary official estimates of the Russian Ministry of Agriculture relating to the yields of the several varieties of grain in the 50 governments of European Russia and in Poland for this year and for 1895. The results are as follows :—

Cereal.	1896.	1895.
	Bushels.	Bushels.
Rye - - - - -	671,679,930	705,884,490
Winter wheat - - - - -	80,413,605	97,995,949
Spring wheat - - - - -	152,919,425	149,443,000
Oats - - - - -	539,939,290	579,642,660
Barley - - - - -	162,183,160	170,918,940

## INJURIOUS INSECTS AND FUNGI.

## INSECTS IN THE SPRING AND SUMMER OF 1896.

Owing possibly to the mild winter, and undoubtedly to the warm and very dry spring, there have been serious attacks of many kinds of insects during this season. Aphides of various species were very abundant. In the hop districts throughout England the hop aphid (*Phorodon humuli*), was more in evidence than usual and much more persistent in its attack. Many planters had to wash the hop plants three and even four times before they got them quite free from the aphides, while fresh flies came continuously as late as the end of June, and where washing was not undertaken the plants became black. In some cases the planters had not money to spend upon washing, which is an expensive process; while others held that with hops at from 1*l.* to 3*l.* 10*s.* per cwt. it would not pay to spend 5*l.* or 6*l.* per acre in washing the plants. It was found that the old-fashioned wash of quassia chips and soft soap was the most satisfactory in operation. A little paraffin, churned up with the soap before the quassia was added, was found by some planters to be useful.

The bean aphid (*Aphis rumicis*), known in some districts as the "collier," was most plentiful, and seriously damaged the bean crop in fields and gardens. Cutting off the tops of infested beans is the best preventive, and this was practised in some cases; but too frequently it was not done early enough, before the aphides had got below the tops of the plants.

The apple aphid (*Aphis mali*) also appeared abundantly in many orchards, and the currant bushes, both red and black, were smothered with aphides of the species *Rhopalosiphum ribis*. Winter moth caterpillars were also on the apple trees, so that the injury caused by the aphides was not clearly distinguished. There was a sharp attack of these caterpillars almost everywhere, but it was stayed, where most severe, by timely sprayings with Paris green solutions, and washes of soft soap, quassia, and paraffin; while in some orchards the caterpillars were checked by natural causes, not apparent, before they had irretrievably ruined the crop. Taking the whole of the apple-growing districts, however, considerable injury was occasioned to the crop by these caterpillars. The woolly aphid (*Schizoneura lanigera*) has been very abundant this season upon apple trees, and has also been seen upon plum trees, and the larvæ of the Codlin moth (*Carpocapsa pomonella*) were very destructive to apples in many parts of the country.

As in some previous years the oaks in many parts of England, and notably in Kent and in Berkshire, were entirely defoliated by the action of the caterpillars of the pretty little moth, *Tortrix*



*viridana*. Other caterpillars also assisted in this destruction, but those of the moth above named were the chief offenders. Birds were busily engaged in clearing off these caterpillars, which came as a godsend to them in the drougthy season when other food was most scarce. Rooks in search of food flocked to the infested oak trees and cleared off myriads. In gardens and shrubberies a few favourite and ornamental oaks were washed clean by hand fire-engines.

Caterpillars of *Hepialus lupulinus* were most active, as well as those of the "Heart and Dart Moth" (*Agrotis exclamationis*), known as "surface caterpillars," and of the latter's congener, *Agrotis segetum*, in turnips, mangel, and potatoes. Dressings of soot and lime, frequent hoeings as far as practicable, and stimulating manures to force the plants along rapidly, were advised for these attacks. Complaints also were unusually numerous of harm from the caterpillars of two butterflies—*Pieris rapæ* and *Pieris napi*—to cabbages. As the chief of these attacks were upon cabbages with large formed hearts, it was difficult to suggest really efficacious remedies. Very finely powdered lime scattered lightly over the plants appeared to be beneficial to some extent and a very slight sprinkling of salt was also advantageously tried.

Hop plants were most injured in the early stages of their growth by the Hop Bug (*Calocoris fulvomaculatus*), which pierces the bines and sucks up the juices of the plants with its long beak. A description of this insect was given in the last number of the Journal.

A curious instance of the false accusation of an innocent insect occurred with respect to the pretty beetle known as *Gastroidea* (*Gastrophysa*) *polygoni*, which, it was alleged, was destroying crops of several kinds. When it was pointed out that this beetle was not likely to injure these crops, further search was made and earwigs were discovered to be the real offenders. These have been extremely numerous and most destructive to some crops, besides invading houses, especially those covered with creepers. Little can be done to prevent this attack, beyond placing traps for the insects in the shape of small wisps of hay, straw, rushes, or bean haulm close to their haunts. They get into these for shelter and retreat during the day, as they feed principally at night, and can be dislodged and killed. Gardeners put small flower pots, filled with hay or straw, on the stakes of dahlias, of which earwigs are very fond in order to catch them; also on peach, nectarine, and apricot trees infested by these pests, and in various parts of gardens where they are troublesome.

Wireworms were particularly destructive throughout the spring to all corn crops and to hop plants in many plantations. "Thousand-legs" were also most injurious to many kinds of crops, and appear to be increasing. Soot mixed with lime in the proportion of one bushel of soot to three of lime is a useful remedy for "thousand-legs" in corn crops, if applied early enough in the season. This remedy was tried on wheat infested

by these creatures and proved very efficacious. It was observed also that a dressing of soot and lime was of considerable value, applied early in the season, to a piece of wheat suffering from a bad attack of wireworms. After it had been put on, the wheat was rolled, and, rain coming on soon after, the wheat grew rapidly. A dressing of 6 or 7 cwt. of kainit has also been found useful in the attacks of wireworms and "thousand-legs."

There have not been so many complaints as usual with respect to the turnip flea-beetle, or "fly." Turnips failed to come up in many districts, or did not come up until late in the season after rain had fallen, so that the beetles were starved out. The same remark applies in a degree to the mangel-fly (*Anthomyia betæ*). Mangels were very late in coming up and in forming plants, the flies, therefore, found no fit places for depositing their eggs, and the usual generations were not produced in rapid succession.

Statements were received that peas were injured by a species of *Thrips*. Upon examining peas that were unhealthy a *Thrips* was certainly present in the pods, but not nearly in sufficient numbers to cause the disorder. Species of the *Thripidae* have been extraordinarily abundant everywhere this summer, and have caused much annoyance to many persons by running over their hands and face. They sometimes cause considerable injury to wheat and oats by sucking up the juices of the swelling grains. One species is troublesome to beans in Germany. A piece of barley was noticed on the 13th of July to be of a different colour from the neighbouring fields, and ripening too fast. *Thrips* and their yellow larvæ, which also feed upon the juices of the grain, were found in most of the ears, but they were principally confined to the lower part of the ear, and were hardly in sufficient numbers to account for the changed colour of the crop.

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#### THE "ARMY WORM" (*Leucania unipuncta*).

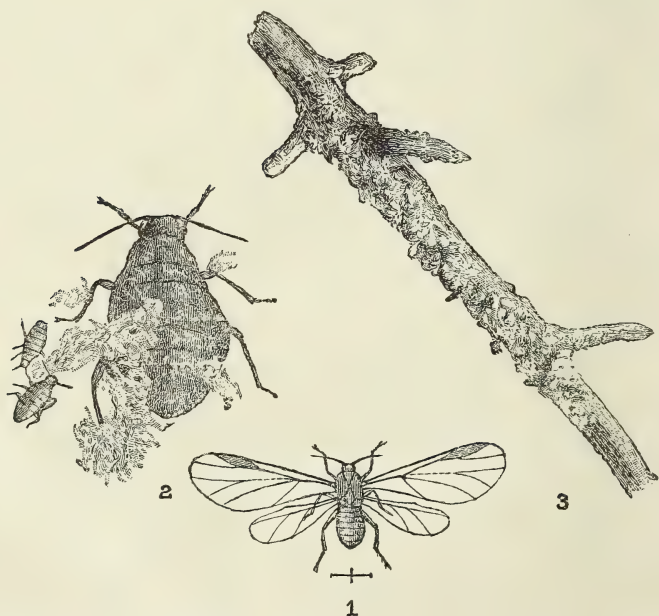
The Board have received information through the Foreign Office of great damage caused last summer to crops of timothy grass, rye, and maize in the state of New York by the "army worm." This "worm," the caterpillar of the moth *Leucania unipuncta*, is always to be found in the United States, and in some years in such quantities that they move like an invading host, and the mischief caused by them is disastrous. On the present occasion the devastation caused by them was noticed early in July; the caterpillars were first seen at the beginning of June, but owing to their habit of feeding chiefly at night their numbers were not suspected to be considerable until much damage had been done. They will eat almost any green food, and it is estimated that in New York State, to which the attack was confined, they have this year ruined crops to the value of several million dollars.

The caterpillars seem to have many natural enemies, notably some species of flies which lay their eggs in the larvæ. Insectivorous birds, certain beetles, and even swine devour them greedily. These, with climatic causes, are usually sufficient to keep them in check, and the conditions favourable to a large swarm have not been clearly determined. The best method of stopping their ravages would appear to be the interposition of a ditch to bar their progress; while such measures as spraying a strip of field, towards which they are moving, with Paris green (afterwards destroying it to prevent injury to stock), heavily rolling the ground, or distributing slacked lime broadcast, have also been resorted to with a certain measure of success.

The insect has been a rare and accidental visitor to this country for many years, while in France and Germany it is not known to be in any way injurious to crops.

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THE WOOLLY APHIS, OR AMERICAN BLIGHT  
(*Schizoneura lanigera*).



1. Winged female, magnified; and line showing natural size. 2. Wingless viviparous female, magnified.\* 3. Apple twig, covered by woolly aphides.

This insect has decidedly increased during the last few years, particularly in orchards and apple plantations where the trees have been unpruned and neglected; and its action is most

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\* Fig. 2 is reproduced, with permission, from Mr. G. B. Buckton's "British Aphides."



injurious. Young trees planted in infested orchards and plantations are frequently so injured by the woolly aphides carried to them by the wind, and by the winged females, that they die. Their bark, being tender, is easily pierced by the sharp beaks of the larvæ, and they cannot long withstand these attacks.

Apple growers often notice bunches of a woolly or cottony substance on the stems, branches, and twigs of apple trees, especially upon scars and cracks where the bark has been injured, or where side shoots and branches have been cut off in an unworkmanlike manner, so that wet has collected and caused decay, and fissures have been formed which have increased in depth and width; while the edges of the outer layers of bark do not join, and a thin tissue covers the exposed parts. Upon examination, the white substance on these parts will be found to consist of little groups of aphides in various stages, some of which are clothed with fine woolly coverings, and are actively engaged in piercing the denuded surfaces with their suckers, and in feeding on the sap, thus causing an abnormal growth of tissue. Extravasation of sap occurs, giving rise to excrescences and warty growths, which afford food and shelter for the numerous generations of larvæ, and, eventually, the whole branch is affected and its vigour and fruitfulness materially impaired. The infestation spreads rapidly to other parts of the tree, and the smaller branches and fruit-bearing spurs are in time attacked. When the twigs and fruit-bearing spurs are attacked, as shown in Fig. 3, they are soon killed by the action of the aphides. After an uninterrupted visitation of these insects, it often happens that the infested tree dies, or becomes useless.

The effect of this attack is sometimes attributed to "canker," but it is altogether different; and careful inspection will show that the Woolly Aphis is the sole author of the mischief. It spreads from branch to branch, from tree to tree, and from orchard to orchard, unheeded and unchecked, and it is sheltered and protected by the lichenous and mossy growths upon the trees, and the thick interlacement of boughs and branches unpruned for generations. The Woolly Aphis is occasionally found upon plum trees, especially where they are planted near apple trees, as well as upon elms.

The Woolly Aphis also infests and injures the roots of apple trees and causes swellings and excrescences upon them. It has been suggested that the aphides merely go under the ground close to the roots for protection from cold; but the colonies found there were evidently feeding upon the roots. Besides, it is certain that they can bear great cold, as they have been seen flourishing under their woolly coverings in the cracks and crannies of the branches after 12 degrees of frost.

The Aphis belongs to the genus *Schizoneura* of the *Aphidida*. It is quite distinct from another species of Aphis found upon apple trees, known as *Aphis mali*, which lives upon the leaves and blossoms. The winged female (Fig. 1), which brings

forth living larvæ, is dark brown, having large wings with black veins; the cubital vein, as pointed out by Mr. Buckton, has a single furcation, or fork, differing in this respect from other tribes of the *Aphididae*. Towards the end of the summer, among the larvæ produced by the winged females are wingless egg-bearing females, of a dirty yellow colour, without beaks or rostra, and therefore unable to feed. Only one very small, round, transparent egg is laid by each of these wingless females, and is deposited in the crevices of the bark. Propagation—the regular continuity of existence—is principally carried on, however, by the hibernating viviparous larvæ, which pass the winter wrapped in their woolly coats upon the trunks of the trees, on the branches and twigs, as well as upon the roots. These wingless females are woolly, of a brown colour, and broad or squat in shape (Fig. 2). The larvæ from these are at first rather lighter in colour, and after a time emit wreaths of woolly material from their dorsal pores, and become completely covered, so that a group of them has the appearance of a piece of cotton wool (Fig. 2). In their early stages the larvæ have enormously long beaks or rostra, bent underneath the body, and extending much beyond the extremity of the body, so that they appear to have tails when seen without a microscope.

There is no visible difference between the generations of this insect that are found upon the branches and those on the roots of apple trees.

#### *Methods of Prevention and Remedies.*

Apple trees should be kept free from mossy and lichenous growths which serve as shelters for woolly aphides, as well as for many other injurious insects. Lichens and mosses can be killed by throwing finely powdered lime over the trees during the winter, in foggy or damp weather, so that the lime adheres to the trees. This can be done by men with tin scoops, like flour scoops, fastened to the ends of long poles. Sulphate of iron dissolved in water, at the rate of 1 lb. to 1 gallon of water, sprayed over the trees in winter by means of a powerful garden engine, or hop-washer, will kill lichens and mosses, and interfere much with the Woolly Aphis.

Young trees should be carefully and systematically pruned, so that their boughs do not intertwine, and plenty of air and light is admitted. Periodical search should be made for woolly aphides and other insects upon young trees. When the Woolly Aphis is discovered in wounds and scars on the stems and branches, which are often frequented by its colonies, these places should be treated in the late autumn or winter with a thick compound of soft soap and paraffin oil, mixed in the proportions of 3 gallons of paraffin to 2 lbs. of soft soap and 25 gallons of water, worked into the cracks and scars with a stiff brush. Infested boughs and twigs should be syringed at the same period with a mixture of 5 or 6 lbs. of soft soap and 5 gallons of

paraffin oil to 100 gallons of water. In mixing the paraffin washes the soap should be dissolved in hot water and the paraffin put in whilst it is hot, and the whole incorporated into a cream with a hand pump, or syringe, working the liquid up and down. Cold water must then be added in proper proportions.

In old orchards and plantations in which pruning has been neglected, boughs and branches crossing each other should be cut away judiciously and daylight let in. Scars and deep fissures on the trunk and stems where woolly aphides congregate should be treated with freshly mixed lime wash having a little powdered sulphur in it, worked well in with a stiff brush. The thick soft soap and paraffin wash would be more efficacious, but it is somewhat expensive. For the infested branches, boughs, and twigs of large trees, spraying with the soft soap and paraffin mixture should be adopted.

In orchards where trees are in regular lines horse hop-washers may be used. In old orchards, where the trees stand irregularly, and in plantations with standards and bushes below, hand washers or garden engines with powerful pumps and long lengths of hose must be employed.

Where apple trees are infested with woolly aphides on their stems and branches, examination of their roots should also be made for infestation thereon, which is indicated by swellings upon the roots, and by the groups of woolly insects. The earth should be removed from the base of the trunk and from a few feet of the lateral roots. Lime wash with sulphur brushed well in, or the thick paraffin wash, would be advantageous. Penning pigs close round infested orchard trees, or watering the roots with strong liquid manure, would make it unpleasant for the subterranean invaders. Kainit hoed in round the roots has been found efficacious in Canada.

Before apple trees are planted their roots should be well soused in a tub containing fresh lime wash and sulphur.

In Australia there are varieties of apples said to be proof against the action of the Woolly Aphis by reason of their bark being hard and its tissues close, and so resisting the action of the beaks of the insects. These are the Northern Spy, an American apple, and the Majetin, a Norfolk (England) variety, and apples in Australia are now always worked upon these stocks. Mr. French, the Government Entomologist of Victoria, says, "Before the advent of these excellent blight-proof stocks, the Majetin and Northern Spy, it was exceedingly difficult to find in most orchards an apple tree that was clean or in perfect health. Now, with a little care and attention, the fruit grower, as a rule, may snap his fingers at the American Blight."

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THE CORN MOTH (*Sitotroga* [*Gelechea*] *cerealella*).

Moth, natural size and magnified.

It is feared that this moth may become as troublesome in British corn stores and granaries as it is in the United States and other countries, seeing that it is now being brought over in wheat and maize from America. Samples of maize were sent to the Board of Agriculture in June last in order that the identity of the little yellowish-white maggots feeding upon many of the grains might be established. The total quantity of Indian corn sent was about three pints; of this at least one-fourth was infested when it was examined, and the infestation gradually increased. Towards the end of August numerous small light fawn-coloured moths came from the corn, and continued to emerge until the end of November. It was thought at first that the moth was the "Corn Wolf Moth," *Tinea granella*, but it is larger than this latter insect and lighter in colour. Mr. C. G. Barrett, to whom the moth was submitted, pronounced it to be *Sitotroga* (*Gelechea*) *cerealella*, Hub. This is the moth which did so much harm and caused so much alarm in France about the middle of the last century, especially in the province of Angoumois, from which cause it was styled the Angoumois Moth, and is still known by this appellation. Curtis writes of it in his "Farm Insects" as *Butalis cerealella*, and says it was called in France "*l'Alucite ou Teigne des grains*." It has been known in parts of the United States since 1780, and has sometimes caused much injury there to wheat and maize, mainly, however, in the more Southern States, as it seems unable to bear the great cold experienced during the winter in more northern latitudes. In Mississippi it is frequently most destructive; wheat put into storehouses or granaries in June being sometimes entirely destroyed by September. Maize is also seriously affected in Mississippi, whole cobs, or ears, being completely riddled by its attacks. It is indigenous in Great Britain, but is not by any means abundant or generally distributed, nor has any injury to grain been recorded against it here.

*Life History.*

In this country the moth first appears in May or June, according to Mr. Stainton, who also states that the larva is found in grain in October and November. In favourable conditions there is more than one brood here, as in France, Germany, and other

countries of Europe. In the United States, according to Mr. L. O. Howard, the moths fly out from the granaries at harvest time and deposit eggs upon the grain in the shocks. Mr. Howard, and Dr. Lintner, report that there are several broods of this insect in America, the number depending upon the latitude. Professor H. E. Weed, of the Mississippi Agricultural College, states that in warm weather it only requires one month to pass from the egg to the moth stage, and that the various stages of the insect can be found in infested grain at all times of the year.

In the maize sent to the Board of Agriculture moths came forth from the latter part of August until the end of November, and larvæ as well as pupæ, and moths which were pairing, were found during this time.

The indications of infestation are lightness of the infested grains, which will swim in water, and a tiny round transparent patch of the skin of the grain cut closely round by the larva just before pupation, to enable the moth to escape by merely pressing against the patch with its head. An infested grain is usually cleared of its contents by one larva. Now and then two larvæ are found in one grain of maize, but there was only one in each of the grains examined in the sample sent to the Board of Agriculture. Curtis, quoting Réaumur, says that a grain of wheat, or barley, contains the exact quantity of nutrition necessary to feed and support the larva until its transformation.

The egg, which is at first almost colourless, soon changes to a light orange colour, becoming darker later on; it is shaped somewhat like a pear, and is generally laid in groups of two to six upon a grain. In about a week larvæ come forth, work their way into the grain, and feed upon the contents. The larva is rather more than a quarter of an inch long, yellowish white, and much wrinkled, with a chestnut-coloured head. It has a few bristles on the first and last segments, and three pairs of claw feet and eight pairs of sucker feet. The pair on the last segment are more distinct than the other six pairs, which are small and hardly discernible without a glass. The sucker feet are furnished with dark coloured hooks. The pupa is very light brown in colour, and rather more than a quarter of an inch long. The wing pads are nearly as long as the body and rather darker. The black eyes are very prominent. Pupation takes place within the grain, and the moth emerges through the little hole, pushing away the thin membrane covering it.

The moth has a wing expanse of slightly over half an inch. The head, antennæ, and body are silver grey; the fore-wings are of a pale, lustrous fawn colour. There are a few dark irregular spots on the fore-wings; in some specimens these spots are more numerous and darker than in others. The hind-wings are somewhat darker than the fore-wings, having long fringes. The legs are of the same colour as the body, except the first pair, which are dark.

Mr. L. O. Howard says that in the State of Virginia *Sitotroga cerealella* passes the winter only in barns and storehouses, and that it will breed uninterruptedly, generation after generation, in stored wheat. In Mississippi, according to Professor Weed there are at least eight annual generations.

### *Methods of Prevention and Remedies.*

There appears to be no reason why this insect should not become established in British grain stores and granaries, and cause a considerable amount of mischief therein. It is unlikely, however, that there will be as many generations in a year as in the Southern States of America, but from the behaviour of the insects in the samples of maize above alluded to, which were kept in a cold room, it may be concluded that breeding would go on at least from June to November in stores and granaries, especially in large heaps of grain.

Care must be taken to thoroughly cleanse and disinfest grain-stores and granaries after infested grain has been placed in them, as the moths creep into cracks in the walls, floors, and partitions, and will lay eggs on the next grain that may arrive; or they will fly or crawl to grain in other parts of the buildings.

Cleansing and disinfestation may be done by syringing cracks and holes with strong soft soap solutions, as well as by scrubbing with stiff brushes.

As a remedy, only bisulphide of carbon appears to be efficacious. This is largely employed in the United States, and recommended by many economic entomologists, among whom Professors Riley and Weed, Dr. Lintner, and Mr. Howard may be cited. A small quantity of the bisulphide is placed on the grain, which must be previously put into an air-tight, or nearly air-tight, bin; and the fumes, being heavier than air, descend and permeate every part of the bin, killing all insect life within it. Used in this way, about one pound of bisulphide, costing about 6*d.* wholesale, is required for each ton of grain. In some granaries there is a bin specially made for this purpose, into which all infested grain is put and treated. Mills and granaries infested with this and other grain insects are disinfested by placing quantities of bisulphide of carbon in open vessels in elevated parts of the building. The mills are then closed as tightly as possible, and the fumes of the bisulphide penetrate everywhere, destroying all insects. If this is done on Saturday night the place will be clear by Monday morning. Fire, lights, and lighted pipes must not be allowed near the bisulphide or in buildings treated with it, as it is highly inflammable.

Professor Weed says that a ball of tow, or cotton waste, saturated with bisulphide of carbon, fastened to a stick and plunged into a bin, or into a sack, has been advantageously tried, especially if the bin is nearly air-tight.

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A LILY DISEASE (*Polyactis* [*Botrytis*] *cana*).

Complaints have been received during the summer from growers of lilies concerning a prevalent and serious attack of a fungoid character upon these plants. The leaves turned brown just before the flowering period, and the flowers themselves either became rusty in colour as they developed, or were so affected by the fungus that they did not develop fully. The varieties principally affected were *Lilium candidum*, *Lilium umbellatum*, and *Lilium auratum*. The disease also appeared upon *Lilium lancifolium* in greenhouses. In some cases the whole crop of lilies grown for market purposes was ruined, and in one neighbourhood the cultivation of lilies has been stopped in consequence of this affection. Plants from bulbs recently imported from Holland were also attacked by this fungus, and a great quantity of tulips were spoilt by it, or at all events by a similar fungus. No infected tulips have been submitted for examination, but it was reported that they were attacked in exactly the same manner as the lilies.

The first indication of this disorder is the appearance upon the leaves of small rusty spots, which gradually spread over them and extend to the buds and flowers. In some cases the buds become deformed by the rapid action of the fungus, and are prevented from coming into full flower; in other cases the flowers are blotched or blurred with brown patches, and rendered useless for cutting. In course of time the leaves fall from the plant, and the flowers become shrivelled, blackened, and utterly useless.

Examination of the infected leaves and flowers revealed the presence of a fungus whose filaments covered the surfaces with glistening branches, surmounted by the peculiarly shaped conidiophores, bearing spores or conidia. It is a beautiful fungus when seen in its earlier stages and while it is still glistening. After a time the branches change to a brown colour.

Professor Marshall Ward has made a special study of this fungus, and has given a most elaborate account of it in "Annals of Botany" (Vol. II., pp. 319-382). He has also described it in his useful handbook of "Diseases of Plants," in which he says that "the *Botrytis*, or *Polyactis*, is only one phase in a very complicated life history." From the mycelium, or vegetative centre of the fungus, hard black bodies are formed called sclerotia, "balls of hyphæ produced by the repeated branching and knotting up of the ends of the branches of the mycelium. . . . In the case of the lily fungus the sclerotia are somewhat irregular in size and shape, and shining black." The sclerotia are, as Prof. Marshall Ward points out, of the utmost importance to the fungus, "for when all the rest of the mycelium has been killed off by dry, cold weather, they remain uninjured through the frosts and snow of the winter, and the hard, black, outer coat of the sclerotium keeps alive the inner

portion of the knotted up mycelium, until the advent of warm weather enables it to grow again."

When the fungus in its *Polyactis* form has established itself upon a lily plant it quickly generates innumerable spores which are wafted by breezes, or borne by insects and birds, and on gardeners' clothes, to other plants, which become in due course centres of infection. It is desirable, therefore, to remove infected plants as soon as they have become sources of infection.

In beds of lily plants where infection is feared, or where infection is noticed in its early stages, it would be useful to apply very finely powdered sulphur, with a knapsack powder distributor, to the plants while the sun is shining. And even when the fungus has appeared somewhat extensively, the application of powdered sulphur would materially tend to check its progress. It is believed that it would be most advantageous to syringe the lily plants, before they begin to put forth buds, with a solution of sulphate of copper and lime in the proportion of—

4 lbs. of pure sulphate of copper ;  
4 lbs. of pure lime ;  
100 gallons of water.

This must be put on very carefully with a knapsack liquid distributor having a very fine spray jet, with the hose so managed that every part of the plant is covered with spray. It should always be borne in mind, when spraying with sulphate of copper solutions (*Bouillies bordelaises*), that it is not intended to direct a stream of liquid on plants so as to wash or soak them, but to cover every part of the leaves and stem with a dew or mist.

It is thought that this weak solution of sulphate of copper would not in any way injure the delicate buds, if it is found necessary to spray these, but trial should be made first upon a few buds, and the effect upon them carefully noted.

All the dead stalks and leaves of infected lily plants should be collected and burnt, to destroy the sclerotia. The ground all round the bulbs should be limed and deeply dug. Land upon which diseased lilies have been grown should not be again planted with lily bulbs until at least one year has elapsed.

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#### A DISEASE OF SNOWDROPS.

Snowdrops are largely cultivated in some districts, notably in parts of Lincolnshire, and growers of these flowers have suffered much in recent years from a disorder which has affected the bulbs, causing them to decay and rot. It seems that the disease is noticed after the flowering of the bulbs, and generally in the second or third year. The bulbs show no signs of disease at the time of planting, but after they have flowered the tops begin to die, and when the bulbs are taken up a large proportion of them is found to be affected.

The system adopted in this cultivation is as follows:—Small bulbs are planted which do not flower the first year, but, remaining in the ground for two years longer, flower abundantly during this period. After the second flowering there is a growth of small bulbs from the old ones. The latter are taken up, and, being of good size, are sold to gardeners: the small bulbs are retained and planted again to produce flowers and bulbs in due course.

A large grower writes: "So far as I can tell, a bulb is attacked after the flowering season, as I have never observed the plants to look at all sickly during their green state; but they seem to go off afterwards as if by magic, whole beds becoming entirely worthless." Another grower says that a "plot of snowdrops at the end of two years did not show the slightest sign of disease, and the foliage died bright and naturally; but this spring not one in a thousand put in an appearance; only a stray bulb here and there, and no sign whatever of the others. They had all rotted and disappeared, leaving no trace behind. My experience is a common one; all goes right for a time, and then the fatal disease puts in an appearance, and the bulbs wholly disappear."

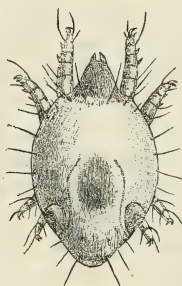
Upon examination of affected bulbs it will be seen that at the commencement of the attack there are brown, or chestnut-coloured, marks under the dried skin, upon the outer folds of the bulb, originating generally close above the root, and spreading upwards. Gradually the inner folds are affected and the whole of the bulb becomes brown; the colour finally changes to black, when complete decay ensues. In some of the brown parts of a few bulbs where decay was not complete, the branching filaments of a fungus could be seen, exactly resembling those of *Polyactis* (*Botrytis*) *galanthina* as described by Berkeley. It appeared, however, that the active state of the fungus was practically over. Mr. Worthington G. Smith remarks that "it is never seen in perfection till the early spring, when it attacks the bulbs with great vigour." This is fully corroborated by the rapid decay of the bulbs after the spring flowering, as stated by the growers. There were also seen upon the delicate skin covering the bulbs dark-coloured sclerotia. These were in what De Bary terms the "resting state," which depends "on the habits of life of the species in the natural condition, whether the period of rest is confined, for example, to winter, or is not constantly connected with the time of year." But in due time sporophores are produced from these sclerotia, from which the conidial stage of *Polyactis* (*Botrytis*) *galanthina* is developed. The sclerotia on the bulbs sent for examination have not as yet germinated, although they have been placed under favourable conditions; their exact relation to the *Polyactis* cannot, therefore, be ascertained. De Bary says that it is often not until after some months that sporophores are developed.

According to Tubeuf an account of a sclerotium found on snowdrop bulbs is given by Ludwig, but no description of it is added.



On account of the inactive state of the fungus and the general decay of the bulbs, it cannot be decisively affirmed that this disorder is altogether caused by *Polyactis galanthina*, or even by any fungus especially, as in many of the bulbs, and particularly on those least decayed, quantities of mites were found feeding upon them, within their folds as well as immediately under the dried skin. Mites in all stages of growth, and eggs, could be seen within the hollows scooped out in the bulbs, and it must be inferred that if they were not the main cause of the malady affecting the snowdrops, they were contributory to it in no small degree.

FIG. 1



*Rhizoglyphus (galanthi ?)*, much magnified.

This mite (Fig. 1) can just be detected without a glass. The body is yellowish in colour, while the head and claws are of a reddish shade. It has four pairs of feet in the perfect state, but the larva has only three pairs. In the female the third pair of feet are particularly thick, and this causes the fourth pair to be pushed farther back than in the case of the male. This peculiarity, according to Claparède, indicates that this mite is a species of *Rhizoglyphus*, and distinguishes it from species of the genus *Tyroglyphus*.\*

There is no doubt whatever as to the mites feeding upon the snowdrop bulbs, and upon the sound parts of them. They were not following in the wake of the fungus, but were living upon the juices of the bulb, and causing decay. On the other hand, it cannot be affirmed that they alone occasioned the whole of the mischief to the bulbs, nor can the amount of the harm due to the fungus be determined.

It seems to follow from the nature of this attack—whether due mainly to the fungus *Polyactis galanthina* or to the *Rhizoglyphus*—that it is most desirable that ground upon which diseased bulbs have been grown should not be planted again until, at least, a year has elapsed, and it would be well to treat such land with a dressing of very finely powdered gas lime. It

\* *Studien an Acariden.* Von Edouard Claparède.

is obvious also that diseased bulbs, and those which have been in contact with diseased bulbs, should not be planted again.

Places in which bulbs are kept in store should be thoroughly scrubbed with strong carbolic, or sulphur soap, especially after diseased bulbs have been stored in them. All pieces of bulbs, and of the skin of the bulbs, should be swept up and burnt.

Bulbs from places suspected of infestation or infection should be dipped two or three times in powdered sulphur, or be well dusted with it.

Bisulphide of carbon would also be valuable. It should be placed in an iron tray above the bulbs, the whole being enclosed in an air-tight, or nearly air-tight, case. This would, at all events, kill the mites upon them.

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### THE NARCISSUS FLY (*Merodon narcissi* [*clavipes* ?].)



Fly (after Meigen), magnified; line showing natural size.

An extensive attack of the larvæ of this fly upon narcissus bulbs in Cornwall was reported early in October. The bulbs sent were much decayed, and upon splitting them open they were found to contain large maggots, evidently the larvæ of a fly. In some of the bulbs there were two larvæ, but generally only one, feeding upon their contents and causing them to become rotten. The market gardener at Penrhyn, who sent the affected bulbs, stated that upon lifting some this year he found five per cent. infested with larvæ. These bulbs had not been lifted for two years and the attack was first noticed in March of this year. In the middle of November a further communication was received from this market gardener to the effect that the attack was more severe than he had at first thought, as he had been compelled to destroy several thousand bulbs of *Narcissus stella*, *Narcissus gloriosa*, and other varieties. He stated further that he had heard of a similar attack at Penzance. The larvæ found in the narcissus bulbs were clearly those of a species of fly known as *Merodon clavipes*, Meigen.

#### *Life History.*

The fly *Merodon narcissi* (*clavipes*) belongs to the genus *Merodon* of the family *Syrphidæ*. Meigen, Macquart, and Schiner describe from 15 to 27 species of *Merodon* known in Europe, but it does not appear that more than two species have been found in Great Britain, and these are somewhat rare.

The species *Merodon narcissi* (*clavipes*), Curtis states, is the only one discovered in this country and that specimens of this are very seldom found. Walker in his *Diptera* only describes *Merodon clavipes*, and adds that it is very rare.

The fly appears in May, and has been seen flying about daffodils and similar plants. It is a large insect, nearly three-quarters of an inch long, with a wing expanse of nearly one inch, and is more like a small bee than a fly. The body is broad, blue-black with metallic lustre, having transverse bands of a golden colour. The wings are grey with brown shades and fringed with yellow. The legs are short and black, and there is a large tooth on each thigh. The eyes of the female fly are set widely apart; those of the male converge. The body of the female is more round than that of the male, which tapers at the extremity.

It is not known where the egg is laid, but probably upon the plant and near to the bulbous part of it. The larva is found in the hearts of the bulbs, feeding upon their succulent parts and causing their decay. The correspondent who forwarded the infested bulbs states that in every case "the grubs seem to enter at the bottom of the bulb and work their way up to the top."

The larva is nearly half an inch long when moving. It generally lies in a curved position, with its cylindrical body folded up, so that its length is not seen until it moves. The colour of its body is ash grey, and brown upon the much wrinkled folds. It has no head, but the upper extremity is pointed and somewhat flattened at the end, immediately under which there is the mouth, which is a mere slit, furnished with two formidable black hooks; above these are two pink divided horns. Upon each segment there is a crooked bristle, and at the lower end of the body, also rather pointed, a shining black warty excrescence projects, upon which two spiracles are placed. Pupation takes place in the earth in a slight silken cocoon. The pupa is dark brown, somewhat oval, with two anterior horns.

It is uncertain how long the larvæ continue to feed in the narcissus bulbs. Some were feeding at the end of November, while others had pupated by that time.

### *Prevention and Remedies.*

From the information received when the infested bulbs were sent, it appeared that a considerable quantity had been imported from the continent, and this seems to be the explanation of so large a number of the *Merodon* larvæ having been found in parts of Cornwall. As this insect is comparatively abundant in some continental countries, it is most desirable that imported bulbs should be carefully examined before they are planted.

Where infestation is suspected in beds of narcissus, the plants should be examined, and, if decay is noticed, the affected bulbs



should be at once taken up and destroyed. It would be better to take up all the bulbs where infestation is seen to occur, even if it is not the year for moving them, as the infestation will increase enormously the second year, and the locality will be stocked with flies. Bulbs in these circumstances should be taken up directly it is safe to move them, before the very earliest of the larvæ have gone into the earth for pupation. When the ground is clear of bulbs it should be dressed with quantities of gas lime and deeply dug. The bulbs should be sorted, and all those decayed or having appearance of decay must be burnt.

THE SMUT OF BROME GRASS (*Ustilago bromivora*, Fischer de Waldheim).



*Bromus mollis* attacked by the fungus *Ustilago bromivora* (drawn by Mr. W. G. Smith).

A. Inner and outer glume with seed infected with the fungus.

B. Spores of corn smut (*Ustilago segetum*).

C. Spores of Brome grass smut.

Complaints were made in the second week of June of a smut which was attacking Brome grass in several parts of the country.

It was especially prevalent in parts of Kent, so much so that when the mowers were cutting the grass thick black clouds came from it; in the words of a correspondent, "making the mowers nearly as black as sweeps. This black dust on the grass is very similar to 'smut' in wheat and smells like it."

Upon examination of the infected grass it was seen that this fungus was upon the flowers and seeds of the grass, and not upon the glumes, or bracts, enclosing the flowers and seeds. It was also seen that the spores of this fungus were larger than those of wheat smut, *Ustilago segetum*, and of a slightly darker colour. Tulasne considered this fungus a variety of *Ustilago segetum*, and styled it *Ustilago bromivora*. Fischer de Waldheim holds it to be a separate species, and describes it, in his paper in the *Bulletin de la Société Impériale des Naturalistes de Moscou*, in which he gives coloured figures of this fungus and of *Ustilago segetum*, clearly showing the distinction between them.

In his *Aperçu systématique des Ustilaginées*, Fischer de Waldheim also describes *Ustilago bromivora*, and states that it attacks several other species of *Bromus*. Tubeuf in his *Pflanzenkrankheiten* gives a short description of this fungus, and says that it does not deform or injure the panicles of the grass, but only attacks the flowers and seeds.

*Bromus mollis* and other species of *Bromus* are bad grasses for pastures and meadows, and should not be sown. Unfortunately there is a considerable per-centage of them in much of the grass land, and where they were attacked by this fungus the hay made of them was seriously damaged; and injury was imparted also to the hay made from other grasses growing amongst them. It is also of scientific interest to note the unusually general attack of this fungus, and to speculate upon the cause of its spread. It could not be from excessive moisture, as the winter, spring, and summer were abnormally dry.

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THE HOP MILDEW (*Podosphaera castagnei*).

FIG. 1.

Perithecia of *Podosphaera castagnei*.

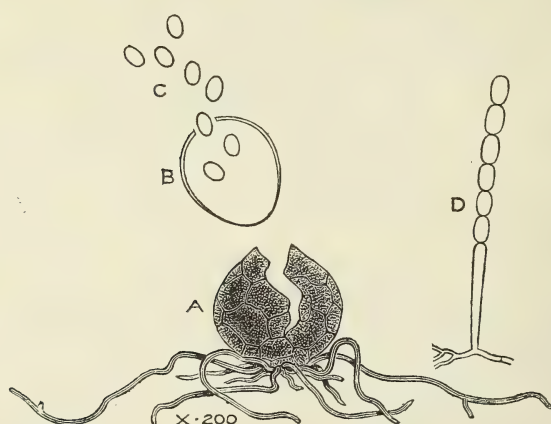
Until the weather changed in the late summer and became wet and cold, there was very little mildew, known as mould in the hop districts, upon the hop plants. A few of the typical white spots of mycelium were noticed on the leaves in June, and later, when the "burr" had set, a few of the young cones in some hop grounds were attacked by the fungus, but it did not spread, and little harm was done at that period, which is generally considered to be the most critical time at which mould "runs" rapidly if the conditions are favourable for its progress. About the middle of the picking time in the first week of September, after wet, cold weather, it was observed that the cones in many grounds, especially those of Old Goldings, changed colour rapidly, and became red, or "foxy," to use the expressive term of hop-growers, and in some instances the colour and quality of the hops were seriously injured. It was said by some that "red mould" was the cause of this rapid "going off" of the colour of the cones. Others thought that the alternations of wet with cold, and occasional scorching sunshine, had injured the tender tissues of the cones and turned them red—that it was merely a physical injury. But the "red mould" theory was generally accepted, and examination was made to discover the nature of the fungus causing this serious and widespread injury. It was considered that it could not be due to weather, as the cones on all sides of the poles and those protected by leaves were just as red as those exposed fully to its influences.

In all cases it was found that the "foxy" cones contained the perithecia, or spore cases, of the fungus *Podosphaera castagnei*,



the hop mildew, shown by Fig. 1. These were very numerous in some of the cones; though indistinguishable by the naked eye, they seemed to be little black groups which would be taken for decay of the tissues or the blackness occasioned by aphides. Under the microscope they appeared as the perithecia of *Podosphæra castagnei*, and it was seen further that the mycelial threads of this fungus were permeating the tissues of the bracts of the cones, and by extracting their juices were producing decay and consequent change of colour.

FIG. 2.



A. Side view of a perithecium of *Podosphæra castagnei*, discharging ascus, B, which is opening and discharging eight sporidia, C,  $\times 200$ .

D. Conidiophore  $\times 200$ .

The fungus was seen in all its stages. The mycelium was upon the bracts, and its branching filaments were within their tissues, although the habit of this fungus is said to be epiphytic. Besides the haustoria there were evidently mycelial threads within the epidermal cells. To make more sure of this infected cones were sent to the Rev. J. E. Vize, who made some minute transparent sections in which filaments of the fungus were traced beneath the surface.

From the mycelium, conidiophores, shown at D (Fig. 2), were springing, white and glistening. These were not so abundant as when formed upon the leaves and upon the incipient cones earlier in the season, at which time they form thick white congeries of mould, but they were clearly in evidence.

At the same time the perithecia, or spore cases, were discharging *asci*, somewhat ovoid receptacles (B, Fig. 2), containing eight ovoid spores, and plenty of empty cases were found in the cones. It may be stated that as early as the 10th of July perithecia were found in the congeries of mycelium upon hop leaves, so that there are two sources of infection,

that of the ordinary conidia, or spores, shown at D (Fig. 2), and that of the spores—ascospores—from the perithecia (C, Fig. 2). Both of these spores are conveyed by the wind, by birds, and insects. The winged form of aphides, and “lady birds” (*Coccinellæ*), which fly from hop plant to hop plant, and run over every leaf and cone, and inside the cones, in search of aphides, are notable spreaders of this infection.

In the summer the progress of the mildew was arrested by treatment with powdered sulphur, which the abundance of sun-heat made very efficacious. When the weather changed, and became gloomy and wet, sulphuring was abandoned in many cases, and where it was continued it failed in efficacy on account of the rain and low temperature, and the heavy rain had washed it off from the cones sulphured late in the summer.

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## GENERAL AGRICULTURAL NOTES.

## MUTTON AND WOOL TRADE OF NEW ZEALAND.

Until the inauguration of the frozen meat trade 15 years ago, wool was the chief consideration with flock masters in New Zealand. The sheep up to the latter time were, according to the *New Zealand Farmer*, for the most part merinos, which were kept as long as they would yield a fleece or rear a lamb, and then their only value was the few pence that their flesh and fat would realise. Large quantities were used for tinning, but millions were boiled down simply for their tallow, which then, and for a few years later, was of substantial value, commanding as much as 35*l.* to 40*l.* a ton, and sometimes even more, whereas it is only worth 17*l.* or 18*l.* a ton at the present time. Apparently the value of the pelts had not then been discovered in the colonies, and hundreds of thousands of the skins of newly-shorn sheep were buried or otherwise got rid of as valueless. Now even the very barest of pelts is worth a few pence; great numbers of them are tanned and otherwise treated in the colony, while others are salted, packed in tierces, and exported to England and America, where they are manufactured into various kinds of leather. Improved processes have enabled the wool to be more economically treated in recent times, and fellmongery is an important industry, while all the by-products are converted into manure, &c. In the old times cross-breeds also were kept for their wool. The fertile lands of Hawke's Bay, Poverty Bay, and some parts of the Auckland and Wellington districts in the North Island were early stocked with long-woolled sheep, and in the South Island the Border Leicesters soon established themselves in Otago, but on most of the native pastures and in the hill country the merino was placed. The freezing trade gave a great impetus to cross breeding—that is, breeding from long-woolled rams with merino ewes, and from that day the merino has steadily become of less importance, giving way to the crossbred wherever the latter would thrive—and in many places where it would not. The change is said to be most forcibly brought before the general public at the great agricultural and pastoral shows, where a dozen years ago merino sheep were the chief feature, while now the merino classes are frequently a complete blank, their place being taken by Leicesters and Lincolns, with, in the North Island, a strong contingent of Romneys.

It seems that the change is continuing, the next phase having been the rapid increase of the Down breeds, the demand for these being purely owing to their value in producing early lamb and mutton for freezing. A severe blow was also dealt



at the merinos in the Canterbury back country by the heavy snows of the winter of 1895, during which 700,000 sheep perished in addition to the normal annual loss. A great part of the country thus deprived of merino sheep has since been stocked with crossbreds, while on some of the runs where merinos remain, Cheviot rams have been introduced, with the view of establishing a hardier and more useful variety of sheep, as has been done in Otago.

The gradual change in the breeds of sheep has been accompanied by a change in their treatment. Formerly sheep farmers generally were content to run their flocks on native pasture, and in good seasons there was a plethora of the finest mutton; but with the advent of freezing regular supplies of fat sheep became necessary, and the provision of fattening fodder had to be undertaken. The country was more and more laid down in English grasses, and then the farmers found that they must grow turnips and fodder crops for the winter, and clover or rape for the lambs in the summer and autumn. Thus arable farming has become an essential part of sheep farming, and it is becoming more and more so.

The changes have, of course, had their effect on wool. Of old, the beautiful, silvery-white merino from sheep grazed on the native pastures was a special feature of the London wool sales, and always commanded the competition of buyers of good grades of wool for the manufacture of choice goods. The universal introduction of English grasses, and still more the use of turnips and rape, are said to have destroyed the distinctive character of those wools, and now only a few clips of such are to be found. New Zealand crossbred wools have, however, established a reputation, and buyers from all manufacturing countries visit the colony each season for the purpose of securing a supply of them. It is considered quite possible that even these may be supplanted in time by the Down and Down cross wools, which are of yet another character, and at present decidedly less in favour with buyers.

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#### SHIPMENT OF FROZEN PRODUCE FROM SOUTH AUSTRALIA.

In the Journal for December, 1895, reference was made to the steps taken by the Government of South Australia to encourage the exports of the Colony by the establishment of a storing and distributing depôt in London, and by the erection of a receiving depôt and refrigerating machinery at Port Adelaide. Additional refrigerating machinery and chambers at this latter port have now been completed, and particulars have been received of the charges and conditions under which the Produce Export Branch

of the South Australian Department of Agriculture are prepared to chill and ship produce. The prices charged are as follows:—

*Butter*: 6*d.* per 56 lb. box, to include receiving, chilling, wharfage, and delivering to lighters at the depôt. Eleven days' storage are allowed for butter which it is intended to export out of Australasia, or six days if it is for colonial or inland trade. 6*d.* per box per week is charged beyond these periods.

*Lamb and Mutton*: 1½*d.* per lb., to include slaughtering, dressing, weighing, bagging, freezing, putting on board vessels at the depôt, wharfage, freight, insurance (covering all usual risks), and London charges (including selling commission and remitting proceeds). *Pork* 1½*d.* per lb., to include the same services as for lamb and mutton. In the case of these animals, a rebate of 35*d.* per lb. will be made to persons desiring to send consignments for sale through their own agents in London. Animals may be delivered at the depôt either alive or slaughtered and dressed, but no allowance will be made for killing and dressing. When the slaughtering is undertaken by the Department, the by-products—except the skins, which will be returned to the owner at the depôt—remain the property of the Department.

*Poultry*: *Ducks* and *Fowls*, 1*s.* 1*d.*; *Turkeys*, 2*s.* each, to include receiving, killing, dressing, packing, cost of wraps and crates, freezing, delivery to vessels at the depôt, wharfage, freight, insurance (but not London charges or selling commission).

*Rabbits*, 4*d.* each, c.i.f. London (London charges and selling commission not included). These must be killed and gutted before being sent to the depôt.

It will be seen from the above inclusive charges how much is undertaken by the South Australian Government. Great attention is paid to the quality of the produce, the Legislature considering that the goods cannot be profitably exported unless the Colony has a reputation for first class quality only. With the object of securing this the following conditions have been laid down:—

Ample notice of the space required must always be given, and all goods must be at the depôt several days before the ship, by which it is desired to forward the goods, leaves the port. Butter must be submitted for examination before chilling. Badly-nailed, indistinctly branded, second-hand, or soiled boxes of butter will not be accepted. The butter-boxes must be lined with the best waterproof butter paper, put in the box in two pieces only, so that the solid square of butter may be shaken out with the paper adhering to it. Each box should contain 57 lbs. of butter, to allow 1 lb. for shrinkage during the voyage. Boxes containing butter must be legibly branded with the name of the factory; &c.

Lamb (of first class quality only) should be about four months old, and weigh from 30 to 40 lbs. per carcase. Mutton, also of first class quality, should weigh from 50 to 70 lbs. Pigs (for fresh pork) should be dairy-fed, and weigh from 60 to 80 lbs. ;

not less than 5 pigs will be received at a time. Fowls should be from three to six months old and weigh not less than 4 lbs., live weight; ducks should be of the same age and weigh not less than 5 lbs.; while turkeys must not exceed 12 months in age, and must weigh at least 16 lbs (gobblers) or 12 lbs. (hens).

The Department reserves to itself the right of accepting or rejecting consignments, and only goods of approved quality will be accepted for export; no claims against the Department on account of rejected produce will be entertained.

With the same object of securing the success of the shipments of frozen produce, various recommendations are urged upon exporters to enable them to command the best price in the English market, the requirements of which are carefully studied. Exporters are advised to use packages of uniform size for their butter, and sample boxes are on view at the Agricultural Department.

The most favourable time for selling Australian butter in England is stated to be between September and March, while for other produce exporters are advised to make their shipments between the following dates:—Lamb, September to January; mutton and pork, September to February; ducks and fowls, January to March; turkeys, October to December; rabbits, August to February.

With regard to butter, of which commodity the Department does not undertake to pay the freight to London, the Government have entered into a contract with two steamship companies under the terms of which the freight to London has been reduced to  $\frac{3}{4}d.$  per lb. (net weight) from the wharf, Port Adelaide, for butter in rectangular boxes containing 56 lbs. each.

In the case of persons having no agents in England, the Department will undertake the sale of any produce consigned through the export depôt, for which the selling commission is not included in the charges already stated, and as soon as the account of sales are received, a copy thereof, together with a remittance for the net result, will be at once forwarded to the owner of the goods.

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#### AUSTRALIAN CONFERENCE ON TICK FEVER.

The Board have recently received a report of an intercolonial Conference on Tick Fever, which was held at Sydney in August last, in pursuance of the agreement arrived at by the Governments of New South Wales, Victoria, South Australia, and Queensland. The Colonies of Tasmania and New Zealand,



although not ministerially represented, sent Departmental officers to confer with those of the other Colonies. The Conference was convened to consider means for preventing the spread of a disease known as tick fever, which exists in Queensland, and has been reported to exist in Western Australia. After full consideration of the information placed before them the Conference came to the conclusion that the disease is caused by ticks, and is identical with what is known as the Texas fever in America; that although the authorities there have given very careful consideration by means of exhaustive experiments and otherwise, no satisfactory method of eradication or remedy has yet been discovered; that the want of definite knowledge points to the necessity of the various Governments jointly undertaking the expense of continuing experiments in the Colony of Queensland as to the nature of the disease, and taking the most effectual measures to combat it. Several recommendations are made to this effect.

The Conference was of opinion that, until the investigations above referred to were completed by the experts, it was desirable that measures should be taken to arrest, as far as possible, the spread of the disease. It was acknowledged that the Government of the Colony of Queensland had already, since the discovery of the baneful effects of this plague, done all that was possible (both by legislative and administrative action) to prevent the spread of the disease, and to discover a remedy for it; but the Conference felt it was incumbent upon all the Colonies to take further precautions to prevent the evils spreading beyond its present limits. With a view to giving effect to this recommendation the representatives of New South Wales, Victoria, and South Australia expressed a wish that, in the interests of Australia generally, the Government of Queensland would see its way to extend the prohibitory line to a point well in advance of any known ticks, and, after full consideration, the representative of Queensland agreed to recommend his Government to also absolutely prohibit the movements of cattle from the central or suspected zone southwards pending further information and results, and until experience should have been gained of the progress of the disease during the spring and summer months of this and next year.

As there is a possibility of the disease being carried to other Colonies by hides, there has been some question as to whether dry-salting or immersion in brine is the more effectual way of destroying the ticks upon them. The Conference came to the conclusion that dry-salting, if properly performed, is absolutely safe, and they concurred in recommending that hides dry-salted should be allowed to be imported into the various Colonies, if accompanied by a certificate from an inspector in Queensland to the effect that the process of dry-salting there had been properly performed.

The Conference agreed to recommend to their Governments that a reward of 5,000*l.* be offered to any person who shall first discover and make known a satisfactory preventive or remedy for the disease known as "tick fever."

In the absence of any representative from West Australia no definite information could be obtained as to whether the disease was spreading in that Colony, and it was recommended that the Government of West Australia be asked to say to what extent the disease existed, and what steps were being taken to deal with it.

The members of the Conference availed themselves of the opportunity to discuss the advisability of adopting an improved system of branding stock, with the object of preventing the loss, now sustained by stock owners, in the value of hides, which, it is stated, amounts to 300,000*l.* per annum; and they decided to recommend to the Governments of the Colonies represented that measures for this object should be introduced into the several Legislatures at the earliest possible date.

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### CULTIVATION OF LUCERNE IN ENGLAND.

Attention has been called recently to the considerable increase in the cultivation of lucerne as a green crop in England, and as the figures collected for the current year show that this crop continues to grow in favour in many parts of the country, it has been thought desirable to give publicity to the areas grown in the several counties in advance of the publication of the details in the annual volume of Agricultural Returns for 1896. A comparative statement has therefore been prepared for each county in England for the present and the preceding four years, with summary figures for the small areas planted in Wales and in Scotland and in the Channel Islands.

From this statement it will be observed that the area under lucerne in Great Britain in 1892 was 16,583 acres, while that returned in 1896 has reached 27,188 acres. Five years ago the counties showing the largest surface then occupied were Essex, where 4,392 acres of lucerne were recorded, and Kent, where the area was very nearly as large. In Essex 6,706 acres are now returned, and 5,940 in Kent. Only one other county, Suffolk, grew as much as a thousand acres in 1892. Now this figure has been passed in several instances. Suffolk now reports 1,721 acres of lucerne; the area in Cambridgeshire has been practically doubled, rising from 633 acres to 1,253 acres.

In Oxfordshire the rate of increase is still greater, the 430 acres of lucerne there in 1892 being raised to 1,052 in 1896.

COUNTIES.	1892.	1893.	1894.	1895.	1896.
<b>ENGLAND.</b>					
BEDFORD - - -	133	166	196	292	308
BERKS - - -	340	444	729	794	841
BUCKINGHAM - - -	316	318	581	782	802
CAMBRIDGE - - -	633	805	965	1,109	1,253
CHESTER - - -	11	3	5	14	1
CORNWALL - - -	41	47	37	76	57
CUMBERLAND - - -	—	1	2	2	1
DERBY - - -	15	7	24	13	19
DEVON - - -	33	44	72	69	60
DORSET - - -	71	124	94	106	101
DURHAM - - -	18	9	11	25	18
ESSEX - - -	4,392	4,551	5,106	5,625	6,706
GLOUCESTER - - -	128	224	289	275	358
HANTS - - -	267	439	509	577	666
HEREFORD - - -	73	82	156	139	165
HERTFORD - - -	589	672	940	1,194	1,438
HUNTINGDON - - -	168	176	285	302	286
KENT - - -	4,359	4,323	4,832	5,449	5,940
LANCASTER - - -	19	6	7	3	14
LEICESTER - - -	16	20	23	35	23
LINCOLN - - -	553	491	759	666	700
LONDON - - -	*—	11	41	30	38
MIDDLESEX - - -	40	43	122	37	25
MONMOUTH - - -	59	64	57	67	62
NORFOLK - - -	905	892	1,025	1,024	1,286
NORTHAMPTON - - -	223	260	340	403	444
NORTHUMBERLAND - - -	10	54	11	7	38
NOTTS - - -	139	122	137	124	197
OXFORD - - -	430	544	704	931	1,052
RUTLAND - - -	5	7	15	12	17
SALOP - - -	20	19	28	65	35
SOMERSET - - -	83	92	133	189	140
STAFFORD - - -	16	12	28	32	29
SUFFOLK - - -	1,123	1,255	1,317	1,620	1,721
SURREY - - -	196	211	407	295	398
SUSSEX - - -	339	369	496	494	445
WARWICK - - -	87	130	206	206	207
WESTMORLAND - - -	—	—	—	—	—
WILTS - - -	165	294	383	342	421
WORCESTER - - -	111	136	203	218	260
YORK, EAST RIDING - - -	38	52	70	104	100
„ NORTH RIDING - - -	8	31	10	1	35
„ WEST RIDING - - -	92	67	123	105	123
TOTAL for ENGLAND - - -	16,264	17,617	21,478	23,853	26,830
„ WALES - - -	290	311	324	329	340
„ SCOTLAND - - -	29	27	52	37	18
TOTAL for GREAT BRITAIN - - -	16,583	17,955	21,854	24,219	27,188
ISLE OF MAN - - -	1	—	1	5	14
JERSEY - - -	62	59	89	95	99
GUERNSEY, &c. - - -	318	314	451	358	405

\* Acreage included in the figures for Kent, Middlesex, and Surrey.



## CULTIVATION OF MUSTARD IN ENGLAND.

The area under mustard has not been hitherto distinguished as a separate crop, but included among the other green crops annually shown in the Agricultural Returns of Great Britain. A special inquiry made in 1896 has, however, obtained certain data on this subject, to which publicity may be conveniently given in advance of the annual volume of Returns, as a matter of some interest. The subjoined table shows the area so returned in all the English counties, with summaries for Wales and Scotland and the Channel Islands:—

COUNTIES.	Acres.	COUNTIES.	Acres.
ENGLAND.		Brought forward -	21,566
BEDFORD - - -	519	NORTHUMBERLAND - -	8
BERKS - - -	619	NOTTS - - -	176
BUCKINGHAM - -	754	OXFORD - - -	458
CAMBRIDGE - - -	4,324	RUTLAND - - -	73
CHESTER - - -	1	SALOP - - -	9
CORNWALL - - -	2	SOMERSET - - -	452
CUMBERLAND - -	3	STAFFORD - - -	10
DERBY - - -	7	SUFFOLK - - -	2,682
DEVON - - -	216	SURREY - - -	284
DORSET - - -	612	SUSSEX - - -	657
DURHAM - - -	—	WARWICK - - -	62
ESSEX - - -	1,081	WESTMORLAND - -	—
GLOUCESTER - -	91	WILTS - - -	568
HANTS - - -	1,718	WORCESTER - - -	49
HEREFORD - - -	68	YORK, EAST RIDING -	1,471
HERTFORD - - -	875	„ NORTH RIDING -	22
HUNTINGDON - -	616	„ WEST RIDING -	354
KENT - - -	459		
LANCASTER - - -	—	Total for ENGLAND -	28,901
LEICESTER R - -	47	„ WALES - - -	5
LINCOLN - - -	6,402	„ SCOTLAND - - -	29
LONDON - - -	—		
MIDDLESEX - - -	—	Total for GREAT BRITAIN	28,935
MONMOUTH - - -	4		
NORFOLK - - -	2,695	ISLE OF MAN - - -	2
NORTHAMPTON - -	453	JERSEY - - -	—
Carried forward -	21,566	GUERNSEY, &c. - -	10

## CULTIVATION OF OATS IN CANADA.

Reference is made, in the last Report of the Director of the Canadian Experimental Farms, to the efforts which have been made from the outset, in connection with the work of these farms, to ascertain what conditions most seriously affect the yields of the various grain crops grown in Canada, and to suggest measures for their improvement.

In the present Report are recorded the results obtained with oats, which is the largest of all the grain crops grown in Canada. It is found that in 1891 there were produced in the Dominion 82,515,413 bushels, which, estimated at an average value of 1 cent per pound, were worth about 28,000,000 dollars (about 5,800,000*l.*).

According to official statistics the average yield of oats in Canada is 26·7 bushels, which, in this respect, is in advance of that of the United States, where the average yield is given as 24·2 bushels; and a long way in advance of another formidable competitor, Russia, where the yield is said to be only 11·9 bushels. On the other hand, the yield is much less than in Great Britain, where the oat crop gives 40·2 bushels, and still more behind that of Norway with 43·9, or Holland with 46·8, bushels per acre.

The analyses which have been made by the chemist of the Experimental Farms of soils in different parts of Canada go to show that they are in no way inferior in regard to their important fertilising constituents to the average farm soils in Europe. The climate in the countries referred to, where the larger averages are obtained, is probably, as a rule, more favourable to the oat crop than the climate of Canada, but these climatic variations are not sufficient in themselves to account for the wide differences in yield. This has been abundantly proved from year to year by the better class of farmers all over the Dominion, whose crops average much larger than those of their less enterprising neighbours. It has also been proved by the yields obtained during the past five or six years at the Experimental Farms. This difference of nearly 14 bushels per acre between the average yield of oats in Canada and Great Britain, or of 20 bushels when compared with the yield in Holland, is a very serious question in its bearing on the profits of farming, since every bushel per acre of increase on the average crop of Canada makes a gain to Canadian farmers, estimating the oats at an average value of 1 cent per pound, of 825,000 dollars, or about 172,000*l.* According to Director Saunders, there are two lines of advance open in regard to the improvement of this crop as well as others. The first is better farming; and the next is, perhaps, equal in importance, namely, the exercise of greater care in the selection of seed, so as to sow only the more prolific sorts.

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#### COLD STORAGE FOR CANADIAN FRUIT.

The Board have received a report of the evidence lately taken by a Committee of the Canadian House of Commons, where it is stated that at the request of the Fruit Growers' Association of Ontario an experiment was made last year to carry to

England some of the early soft and perishable fruits. The request came rather late in the season, and at the time no provision could be made in the way of a special compartment for transporting these fruits; and the Minister of Agriculture further carefully explained to the delegation who waited on him that no further appropriation could at the time be set aside. The appropriation already voted was for the purpose of transporting butter; but if the fruit growers cared to accept the situation as it stood, and if they were willing to substitute a shipment of fruit for a shipment of butter, for which the compartments were originally designed, he would raise no objection. This was done, and a shipment of fruits, consisting of pears, peaches, plums, grapes, tomatoes, and apples, was made. These fruits were carefully selected in the Niagara and Grimsby districts, each specimen being wrapped in paper and put in small packages and forwarded to Montreal from Winona by refrigerator car. Unfortunately, the car did not arrive in Montreal in a sufficiently cool condition for the proper preservation of the fruits. The ice had disappeared, and the fruit was comparatively warm. It was immediately cooled with ice and salt, placed in a compartment on board the steamer, and shipped to England under the best conditions available at that time. The more tender fruit did not, however, arrive there in a satisfactory condition, for the peaches, plums, and grapes suffered considerably. The pears and tomatoes arrived in somewhat better state. Forty cases of early fall varieties, more or less perishable kinds of apples, such as the St. Lawrence and Alexander, were shipped from Montreal in cases 10 inches deep, 12 inches wide, and 20 inches long, each holding about a bushel. They were sold by auction in Liverpool, and netted a little over a dollar (4s. 2d.) a box, so that, as far as the apples were concerned, the shipment gave good returns. The growers, at any rate, were quite satisfied.

The principal condition militating against the successful carriage of the pears and peaches was that the refrigerator compartment did not afford a sufficiently low temperature to prevent the germs of fermentation from developing and multiplying. The process of fermentation having been started in the heated car, it was developed by the fruit being packed in these tightly closed packages with too high a temperature.

The Canadian Government defrayed the freight as well as the cold storage expenses, although they had not originally agreed to bear more than the loss of the latter, so that the only cost to the growers was the fruit and the labour of packing. The returns from the fruit which was sold more than defrayed the cost of the packages, so that the growers were not out of pocket, as they had at first expected to be.

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## ADULTERATION OF MILK AND BUTTER.

In the Twenty-fifth Annual Report of the Local Government Board, Eng'land, 1895-96 (C.—8212), it is observed that milk continues to be the chief subject of analysis under the Food and Drugs Act, 1875. The number of samples analysed during the year was 18,307, of which 2,030, or 11·1 per cent., were condemned. In judging of milk the public analyst is often obliged to pass samples which are equal in composition to only the poorest of genuine milk, although he may strongly suspect that he is dealing with samples artificially and not naturally weak. The difficulty of repressing milk adulteration is much increased by the practices of certain dealers, who, by the skimming of cream or the addition of separated milk to milk of excellent quality, succeed in lowering the quality of the article, so that it just comes up to the requirements of the analyst. In this connection it may be noted that, in addition to the 2,030 samples which were condemned, there were nearly 400 which barely reached the analyst's low standard, but were passed as "very poor," of "doubtful genuineness," &c.

With respect to milk adulteration, London compares very unfavourably with the rest of the country. In 1895, the proportion of adulterated samples of milk in the metropolis was as high as 19·3 per cent, as against 6·6 per cent. in the 32 great towns of England included in the Registrar-General's weekly returns, and 9·4 per cent. in the counties and remaining boroughs. In different parts of London, the per-centage of adulteration varies considerably. In five districts the samples condemned were less than five per cent. of those examined, while in 11 others more than one-third of the total number of samples analysed were reported against.

There were 72 samples of condensed milk examined, of which three were condemned. Some of the samples passed as genuine were sold under the name of "condensed skim-milk," and from these it was found that on an average nine-tenths of the cream had been abstracted.

Legal proceedings were taken against the vendors of 1,305 out of the 2,030 samples of milk reported against, and in 1,121 cases penalties were imposed, amounting to 2,191*l.* 8*s.*

Butter, or what was sold as butter, was the subject of analysis in 7,186 cases, 590 being condemned. This gives a per-centage of 8·2, which is considerably lower than in any previous year. The majority of the 590 samples were condemned on account of their being wholly margarine, or of being mixed with margarine in different proportions. A few were reported against because they contained an excess of water, but in the absence of any standard, some samples which contained over 20 per cent. of water were passed as genuine. Proceedings were taken in 559 cases, and 475 fines were inflicted.

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## EXCISE DUTY ON BEER: BARLEY SUBSTITUTES.

Section 10 of the Finance Act of 1896 (59 & 60 Vic. cap. 28.) has effected an alteration in the classification for excise purposes of the materials used in the manufacture of beer. It provides that for the purpose of the charge of duty upon beer brewed in the United Kingdom, rice and flaked maize and any other description of corn which, in the opinion of the Commissioners of Inland Revenue, is prepared in a manner similar to flaked maize, shall not be deemed to be malt or corn, but shall be considered to be material capable of being used in brewing within the meaning of the definition of "sugar" in section 2 of the Inland Revenue Act, 1880.

The effect of this change is that 28 lbs. weight of rice, flaked maize, and preparations similar to flaked maize, is to be deemed equivalent to a bushel of malt, whereas formerly these materials were charged on the basis of 42 lbs. to the bushel of malt.

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## AGRICULTURAL BUDGET OF HOLLAND.

A recent number of the *Nederlandsch Landbouw Weekblad* contains particulars of the Dutch Agricultural Budget for 1897. The total amount of the vote for agriculture is 71,448*l.*, of which 31,725*l.* is devoted to the Veterinary Department, 33,682*l.* to agricultural education. The sum allotted to the Veterinary Department includes 16,717*l.* for the Department proper, 7,925*l.* for the State Veterinary School, 167*l.* for subsidies for lectures in shoeing, 250*l.* for expenses of veterinary examinations, and 6,667*l.* for subsidies and grants for the improvement of horses and cattle.

As regards agricultural education, a sum of 14,094*l.* is devoted to the State Agricultural College; the salaries and expenses of inspectors and teachers of agriculture, horticulture, and dairying absorb 11,833*l.*; 7,562*l.* is set aside for the State Experiment Stations and for grants in aid of experimental plots; the subsidy to the phyto-pathological laboratory is 42*l.*; and 150*l.* is to cover the cost of examinations.

The remainder of the vote is made up of a grant to the Dutch Agricultural Society of 1,125*l.*; and a sum of 3,167*l.* for the preparation of a geological map of Holland. The cost of examination of butter, the printing and distribution of reports, orders, and other minor expenses account for 1,750*l.*

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## NEW SCHOOL OF AGRICULTURE IN EGYPT.

The Board have received from the Foreign Office copies of the regulations issued by the Egyptian Minister of Public Instruction for the institution of a new school of agriculture, which is to take the place of the old Agricultural College.

The instruction is intended to be both practical and theoretical, including agriculture, chemistry, land surveying, natural history, mathematics, hydraulics, veterinary science, book-keeping, and the English and Arabic languages.

The complete course of instruction will extend over four years and a diploma will be granted on passing an examination at the end of the course.

### THE FINNISH BUTTER TRADE.

The Director of the Finnish High School of Agriculture has recently written an interesting work\* upon agriculture, which contains some useful information relating to the progress of the dairy industry in Finland. The total number of cows in the country in 1893 is stated to have been 949,000, as compared with 670,000 in 1865. Several attempts have been made to introduce various foreign breeds of cows, but the native race has not lost its popularity, and is generally recognised to be a good milker. The Finnish cow is said to be usually a small animal, weighing about 660 lbs. live weight, of a pale red colour, and sometimes polled.

The production of butter in the country has been carried on for a number of years, and even in the middle of this century the exports of Finnish butter exceeded a million pounds annually. In 1867 about 6,600,000 lbs. were exported, and there has since been a steady development.

Until about ten years ago upwards of 50 per cent. of the butter exported was sent into Russia, but this trade has declined considerably in recent years, the bulk of the Finnish butter being now consigned to Denmark and Great Britain. The exports in the five years ending with 1895 were as follows:—

Year.	To Russia.	To Other Countries.	Total.
	lbs.	lbs.	lbs.
1891 - -	3,507,640	14,012,194	17,519,834
1892 - -	2,179,430	15,625,030	17,804,461
1893 - -	3,213,463	17,997,177	21,210,640
1894 - -	2,928,409	26,408,743	29,337,152
1895 - -	1,828,200	29,224,919	31,053,119

Formerly a large portion of the consignments to Great Britain was sent across Sweden, but this traffic was checked by the Swedish duty on butter, and now nearly the whole of the butter exported to the British market is shipped direct. Finnish butter is largely consumed in Copenhagen, where it is sold at lower prices than the Danish produce.

\* Landbruget i Finland. Dr. Gösta Grotenfelt.



Some further information relating to the Finnish butter trade is also given, in his report for 1895, by Mr. Behncke, Her Majesty's Vice-Consul at Lübeck. It seems that the local condition of the Lübeck market for Finnish butter has totally altered. In former years, viz., from 1870 to 1885, large supplies arrived, amounting to 2,000,000 and 2,500,000 lbs. a year; but they have since gradually declined, and now, at best, only amount to 600,000 lbs. a year. The cause of this is chiefly to be sought in the fact that Finnish butter has greatly improved in quality. Formerly production in Finland was mostly in the hands of peasants, and these, owing to the small number of cows in the possession of each, could furnish but little butter, so that the collection of large quantities for export took a considerable time, the result being that the quality was very inferior. But this state of affairs soon changed. The owners of large estates were aware of the deficiency of their produce, and seeing that great progress had been made in the dairy system abroad, they procured modern and improved appliances.

The tubs of firwood formerly used for the transport of butter were abolished; butter-tubs of beechwood, as they are used in Holstein, were procured from Germany. Improved butter of excellent quality was sent to England and Germany, where it obtained a gold medal at a Hamburg Exhibition in competition with German butter. From that period the business took a different course, and a considerable quantity of such superior butter went straight to England, where it found a ready sale. The peasants and other natives of Finland formed associations and procured centrifugal separators in great number, so that production and quality made rapid advances. At present things have gone so far that only one-fourth or one-fifth of the old peasant butter is exported, and is little noticed, whereas the production of superior Finnish butter is progressing. Margarine is almost unknown, imports of that product into Finland being prohibited.

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#### DAIRY PRODUCE IN QUEENSLAND.

According to a report which the Board have received from the Government of Queensland, it appears that, owing to the dry weather operating most adversely to dairying, the quantity of butter made in the colony in 1895 declined by 14 per cent. as compared with 1894.

The consumption of butter in Queensland, judging from the experience of the past two years, would appear to be about 10½ lbs. per head. In 1894 the production of butter in the colony was very nearly equal to the home consumption, the excess of imports over exports in that year amounting to little more than 200,000 lbs. weight; the shortage in the supply for 1895 had, however, to be met by an increased import, the excess in that

year amounting to rather more than 1,000,000 lbs. The fluctuation in supply from year to year, as a result of the climatic changes to which the colony as a tropical and semi-tropical country is so especially liable, might, it is thought, be largely modified were less reliance placed upon the natural herbage, and a system adopted of grazing dairy cattle on improved, if not actually sown, pastures, supplemented by a certain amount of stall feeding. The outlay necessitated by this system would, it is maintained, be amply returned, and the farmer would then soon learn the advantage to be derived from bestowing his time and food only on animals bred from the best milking strains, which are alone suited to his purpose. This question has received a great deal of attention at the hands of the officers of the Agricultural Department, who have drawn attention to the butter-producing capacities of the average Queensland dairy cow as compared with the cows of Victoria, the United States, and elsewhere, and have impressed upon dairymen in the colony the necessity of weeding out their herds so as to have no cows included therein which do not produce a certain quantity of milk. These exertions will, it is believed, have a good effect, and a more regular and greatly extended output of butter may be looked for in the future. Should such a result be attained, the question of finding a market elsewhere than in Queensland will then arise.

There was a much greater quantity of cheese made in 1895 than in 1894, namely, 1,841,799 lbs. in the former and 1,536,979 lbs. in the latter year. Although a great improvement is said to be apparent in the quality of Queensland cheese now in the market, some of it being really good, it is in too many instances very inferior and leaves much to be desired. The production is now only a little short of the consumption, consequently the imports of the article for 1895 amounted to but a tithe of the quantity consumed during the year. The annual consumption of cheese per head is estimated to be about  $4\frac{1}{2}$  lbs., but it is believed that the use of cheese as an article of diet would be greatly extended if a high quality could be attained and the cheese retailed at a lower price than is at present charged.

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#### WHEAT CULTIVATION IN GERMAN EAST AFRICA.

The *Deutsche Landwirtschaftliche Presse* of the 22nd August, quoting from the *Deutsche Kolonialblatt*, states that the demand for corn in German East Africa is at present mostly supplied by Indian and Hungarian wheat, which is imported by way of Zanzibar. But few districts of East Africa are adapted to wheat cultivation, and among these the neighbourhood of Tabora takes an important place. A little while ago considerable samples of Tabora wheat were sent over by the Imperial Government at Dar-es-Salaam, and handed over to the Royal

Agricultural High School at Berlin. According to the Director of that establishment this wheat appears to be of excellent quality, and to contain a high per-centage of protein. A sample of the wheat reached the Berlin Corn Exchange, where the merchants greatly praised it, and pronounced it to be similar to the Theiss wheat of Hungary, and yet to be as soft as the American red winter wheats. Experiments in baking the flour obtained from this African wheat are also stated to have yielded satisfactory results. If Tabora wheat cannot be looked upon as a possible article of export from East Africa (the locality is situated about 500 miles from the coast), still it is hoped that its cultivation may be sufficiently extended to enable the colony to produce sufficient grain for its own requirements.

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#### SALE OF SUGAR IN BELGIUM.

The Board of Agriculture have received through the Foreign Office a copy of a decree, issued on the 31st August last, regulating the sale of sugar in Belgium. The decree is promulgated in accordance with the law of 4th August 1890 on the adulteration of foodstuffs, and is intended to prevent the sale or transport of adulterated sugars and glucose. The admixture of any foreign substance (except harmless colouring) is forbidden, unless its designation appears clearly on a label attached; as is also the presence of more than certain per-centages of mineral matter or acids; while the presence of antiseptics in syrups, or of appreciable quantities of noxious metals or acids (such as lead, zinc, oxalic acid, arsenical compounds, &c.), renders the sugar unfit for sale. Sugar may only be sold wholesale and to the retail trade in packages clearly marked with the name or trade-mark of the manufacturer or merchant.

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#### CARRIAGE OF MANURES IN PRUSSIA.

The Board have received information through the Foreign Office that, in view of the agricultural distress in Prussia, the majority of the railways (which are for the most part State railways) have introduced a so-called "Distress Tariff" for the carriage of manures. This reduced tariff took effect on the 15th June last, and is to remain in force until May 1st, 1902. During this period manures will be carried at a reduction of 20 per cent. off the current rates (minimum load 10 tons), provided that they are "to be applied as manure in the home country." This notice is to be given on the bill of lading. If it is omitted the ordinary rates will be charged, but the consignee will be able to recover



the 20 per cent. upon adducing proof that the manure has been, or will be, applied to land. In the case of farmers, a certificate from the public authorities, the mayor, or the board of an agricultural society, will be accepted as proof; in the case of dealers and artificial manure and chemical works, a declaration of the consignees will suffice.

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## FOREIGN AND COLONIAL OFFICE REPORTS.

## SHEEP IN THE FALKLAND ISLANDS.

The last report published by the Colonial Office relating to the Falkland Islands contains interesting information regarding the sheep industry of the colony during the year ending 31st March 1896.

The number of sheep in the colony in March, 1896, amounted to 791,442, consisting of 314,216 rams and 477,226 ewes. The sheep are, generally speaking, a mixed cross breed, and have the appearance of having originally come from merino stock. Only in the case of a few stud rams is any purity found. The lambing during the year shows an average of 65 per cent., which is considered good when the severe weather in the spring is taken into account. There is one recognized stud flock from which several farmers secure their flock rams. During the year, 27 Lincoln and five Cheviot rams were imported from England, and were divided amongst farm owners. The farmers are advised to import more pure blood, and establish some better foundation in their flocks. The clip was estimated at about half a pound per sheep better than last year, and this is considered most satisfactory.

With the exception of scab there is practically no animal disease in the Colony, and this is fast disappearing, for, since the introduction of the Scab Ordinance, farmers pay stricter attention to gathering and dipping their sheep. Tetanus and scrofula are met with occasionally, but the health of flocks is generally good.

Dipping is a matter which occupies the serious attention of the inspectors. In many cases the dipping-baths are too short, and the sheep are plunged in and out without being allowed to remain a sufficient time in the mixture. Occasionally, too, the dip is blamed for non-efficiency, whereas better results would be obtained if more attention were paid to the proper mixing of the dip, and to keeping the sheep in the bath for a sufficient time. This does not, however, apply to all farmers, especially those on the West Falklands, who have no scab among their flocks.

The number of carcases of frozen mutton exported in 1895 was, roughly, 19,000, but there was no prospect of any being exported this year. The development of this industry is being fostered, and it is to be hoped that next year will see considerable activity in this direction, as the Colony, it is said, should be exporting from 50,000 to 70,000 carcases annually. Government inspection and a system of grading would give security to consumers without incurring any great expense to the producer.

The chief inspector of stock sees no reason why shipment of live sheep should not be made from the Colony. "Thousands of

sheep," he says, "are going every month from the River Plate to England, why not from the Falkland Islands? We are right on the track of homeward-bound Australian and New Zealand steamers, and I feel certain that these could be induced to call and pick up deck loads of sheep. This Colony is favourably located for the purpose, as it has several fine harbours in most central and convenient situations."

Boiling down for the tallow is carried on at some six stations, three of which have complete plant for the purpose. Some 25,000 carcasses were boiled down in 1895, but this number will be largely increased in 1896, as no frozen meat will be exported.

The Colony is eminently adapted for sheep farming, and sheep farming only. It is abundantly supplied with natural grasses, no artificial kinds having ever been introduced. Sheep farms are exempt from many drawbacks which other countries have to contend against, such as droughts, want of facilities for transport, footrot in sheep, and, last but not least, rabbits. These latter are not regarded here as a pest, being only found on small islands, and even there they are dying off, possibly, it is said, from some disease of the liver.

The quantities and values of the total exports in connexion with the Stock Department in the past year are shown as follows:—

	£	s.
Wool, 4,024,500 lbs. -	100,612	10
Frozen mutton, 19,432 carcasses -	6,801	4
Sheep skins, 80,230 skins -	10,028	6
Tallow, 329,900 lbs. -	2,749	0
Hides, 1,592 -	796	0
Total -	120,987	0

[*Colonial Reports*, No. 175. C.-7944-27. Price 1½d.]

#### AGRICULTURE IN ROUMANIA.

The Foreign Office has issued a report on the trade of Roumania, drawn up by Mr. Hamilton Browne, second secretary of Her Majesty's Legation at Bucharest, from which the following particulars relating to the agriculture of the country are taken.

Roumania, as is well known, is essentially an agricultural country, and its resources are to a very great extent due to the richness of its crops, springing from a fertile soil, which, as a rule, requires no manuring. Roughly speaking, however, not more than half the country is under cultivation, 10 of its districts being thickly wooded, while 20 are arable.

The chief produce of the country is maize, which is sown in large quantities and forms the staple food of the peasants, the residue being employed in the manufacture of spirits and as food for swine. That which is not consumed in the country is exported



for the most part to Ireland, especially the superior quality grown in Moldavia, and known as "red maize."

Next in order comes wheat, the richest districts being those bordering on the Danube, though an excellent quality of grain is produced in many of the districts of Moldavia, from whence, in consequence of its superior quality, it is shipped chiefly to Dantzic, and, it is stated, often passes as Baltic wheat.

Although the means of cultivation and of reaping are still in some cases of a somewhat primitive nature, a large quantity of English and American reaping machines are used, and the wooden plough, which only penetrated to four inches in depth, has been almost everywhere replaced by one of German manufacture. Few machine ploughs are used, except one kind, which, however, is costly, and in many cases beyond the means of the farmers and landed proprietors. The methods adopted in sowing are also still somewhat defective, and manure is nowhere used, so that the soil, though of very rich quality, is liable in some cases to become overworked; but land is generally allowed to lie fallow every two years. The greater part of the grain is exported to the United Kingdom, though Austria, and more especially Germany, now receive a certain portion, as a result of the competition of American and Indian wheat in the British market.

In consequence of the wish expressed by an English firm to be put into direct communication with the millers of Roumania, a meeting was held at Bacău, in Moldavia, in April last with a view of securing some united action for the export of flour. The mills, owned by these millers are calculated to produce 12,000 "waggons" (trucks of 10 tons each) of flour per annum. The chief mill is situated at Botoshani, and produces some 5,000 "waggons," or 50,000 tons of flour, annually. Most of these millers are, however, not capitalists, and they would have to combine in order to ensure the satisfactory working of this scheme.

The cultivation of barley is not so large as it has been, but since the starting of various breweries and distilleries in the country it is hoped that the production of this cereal may be further encouraged and increased.

The other crops are oats, rape-seed (*colza*), used in the manufacture of oil, millet, rye, hemp, &c. The cultivation of hemp in the country is at a very low ebb, that which is required for the local rope factories being mostly imported from abroad.

[*Foreign Office Report, Annual Series, No. 1773. Price 4½d.*]

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#### RUSSIAN DEPARTMENT OF AGRICULTURE.

In his Report to the Foreign Office for the year 1895 on the trade of St. Petersburg, Mr. John Michell, Her Majesty's Consul-General at that city, states that although a separate Ministry of Agriculture was created in Russia in 1893 for the purpose of

ameliorating the agricultural condition of that country, not much has yet been done in that direction, too little time having elapsed since this Ministry was called into existence for any marked success to be recorded in its favour.

During 1895, the principal measures adopted by the Minister of Agriculture have consisted in his inspection of several parts of the Empire and in a careful examination of their condition and requirements in agronomical respects; also in convening in Moscow and St. Petersburg meetings to which the most experienced and enlightened landed proprietors were invited to express their views for the improvement of agriculture in all its branches throughout Russia, and to submit suggestions in connexion with this subject. It is noteworthy that both at the St. Petersburg and Moscow meetings the opinion was unanimously expressed that without a greater spread of elementary education than that now existing among the peasantry, no improvement of the agricultural condition of the country could be possibly expected.

The sum placed annually at the disposal of the Ministry of Agriculture does not at present exceed 350,000*l.*, with which no general scheme of agricultural improvement and instruction can be carried out. The programme, therefore, of the new Ministry is, on the whole, confined for the time being within the domains of theory.

A few exceptional practical measures have, however, been adopted at the suggestion of the Ministry of Agriculture. Thus, with a view of benefiting the rural classes, the Government insurance tax on agricultural products and machinery mortgaged to the State Bank has been abolished. More important was the decision of the Minister of the Interior to free the Zemstvos of 34 provinces from bearing the cost of maintenance of the "Zemski Nachalniks," or special territorial executive and judicial police officials, and of the whole machinery of their administration. The cost of maintaining this institution, the utility of which is much doubted, amounted annually to 867,000*l.* In lieu of this expenditure the Zemstvos are obliged to devote an equal sum to the maintenance of existing roads and construction of new ones, especially of those leading to railways, to which easier access would thereby be obtained for rural produce.

[*Foreign Office Report, Annual Series, No. 1801. Price 4½*d.**]

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#### INTRODUCTION OF PLANTS INTO ITALY.

In a Report on the Trade of the Consular District of Naples, Mr. Consul Neville-Rolfe remarks that the reason given for the fact that Great Britain was not included in the "Phylloxera Convention" is, that as the British Isles have no phylloxera, and never had, it was of no good to enter it; but this omission has caused a serious loss to that branch of British trade which

occupies itself with the exportation of plants and grafts. To import plants into Italy from England requires the permission of the Italian Ministry, which must be obtained through Her Majesty's Ambassador at Rome. It is obvious, however, that the transit must be as rapid as possible, and any delay at the frontier must be scrupulously guarded against. The permit must, therefore, be so timed as to arrive at the frontier as nearly as possible when the plants do, for if it arrives before, it is pigeon-holed and forgotten; if after, the plants are kept waiting and withering till it comes. In short the present state of affairs gives much trouble, and is practically prohibitory of import.

If it were possible for England to be included in the Convention before next spring, it may be confidently asserted that an important market would be thrown open to English nursery gardeners.

There is a large market in Italy for new sorts of roses, bulbs, and grafts generally, there being many amateurs who spare neither labour nor money over their flower gardens, and many others, both professionals and amateurs, who would, if they could, introduce many plants, and especially many grafts, because the latter are portable. As to grafts, it is the custom here to use much stronger scions than are usually adopted in England, and exporting gardeners should recollect this. For their guidance the following details on grafting in South Italy are given.

Fruit trees are grafted in three ways:—

1. In winter the top is sawn off the parent stem, a slit is made, and the graft or grafts inserted; the whole is then firmly tied round, and smeared with a mixture of Burgundy pitch, tallow, wax, and ashes.

2. In the spring, walnut, oranges, lemons, and mandarins are grafted thus:—The top having been sawn off as before, the grafts are inserted between the bark and the wood, tied firmly, and smeared with pitch.

3. A plan which is particularly successful in this climate is the following:—The grafting having been completed, no pitch is used, but a few of the leaves of the plant are laid on the grafts, the whole being tied up hermetically with a cap of strong paper. The paper being a non-conductor, the moisture of the leaves being brought out by the heat of the sun, keeps the grafts damp, and causes them to grow freely.

Budding is only conducted in summer, a season when export from England is more difficult, as the buds are apt to wither on the journey.

[*Foreign Office Reports, Annual Series, No. 1789. Price 2d.*]

#### COST OF FARMING IN OREGON.

The annual report on the trade of the Consular District of Portland (Oregon) for the year 1895 contains the following estimate of the cost of raising wheat, made by an experienced farmer, in the Walla Walla Valley. The calculations are made



on the assumption that 400 acres yield 10,000 bushels of blue-stem wheat. The land was summer fallowed in 1894, and valued at 6*l.* per acre. The locality is one where water and material are reasonably convenient, and the land not very hilly and easy to work :—

	Amount.
	£ s. d.
Ploughing, twice, at 3 <i>s.</i> 9 <i>d.</i> per acre each time - -	150 0 0
Harrowing, thrice, at 5½ <i>d.</i> " " - -	27 10 0
500 bushels of seed wheat, at 2 <i>s.</i> 1 <i>d.</i> - -	52 1 8
Cleaning and vitriolising seed - -	5 2 1
Sowing, at 7½ <i>d.</i> per acre - -	12 10 0
Cutting, at 4 <i>s.</i> 2 <i>d.</i> per acre - -	83 6 8
Threshing 10,000 bushels, at 2¼ <i>d.</i> - -	93 15 0
4,400 sacks, at 10 <i>l.</i> 4 <i>s.</i> 2 <i>d.</i> per 1,000 - -	44 18 4
30 lbs. twine - -	2 1 8
Hauling to railroad, at 1¼ <i>d.</i> per sack - -	22 18 4
Interest on payments - -	37 17 11
Warehouse charges for season - -	25 0 0
Total - -	557 1 8

The cost of raising wheat on the basis of this estimate only amounted to 26¾ *c.*, or 1*s.* 1¼*d.* per bushel.

The same report gives also some figures showing the actual results obtained from a flock of sheep in 1894. The capital invested was reckoned at 4,296*l.*, made up as follows, 3,320 acres of land at 1*l.* per acre, 1,200 breeding ewes at 5*s.* each, and 3,380 yearlings at 4*s.* each. The gross income amounted to 1,429*l.*, made up by the sale of 2,110 sheep and of the wool, together with the sum of 240*l.*, the estimated value of the lambs dropped during the year. The expenses were as follows :—

	Amount.
	£ s. d.
Two herders, at 6 <i>l.</i> per month, 1 year - -	144 0 0
One camp tender, 4 months - -	24 0 0
Feed, actual cost - -	80 0 0
Shearing, at 2¾ <i>d.</i> - -	49 7 7
115 sacks - -	6 8 9
Hauling wool - -	5 0 0
1 ton salt - -	3 12 0
Taxes - -	20 0 0
Interest on land at 5 per cent. - -	332 8 4
" sheep, at 10 per cent. - -	166 0 0
" 910 yearlings to keep up number in old stock - -	97 12 0
910 yearlings to keep up number in old stock - -	182 0 0
Total - -	778 0 4

The net profit for the year amounted to 650*l.* 19*s.* 8*d.*, or a little over 15 per cent. on the invested capital.

[*Foreign Office Report, Annual Series, No. 1734. Price 3d.*]

## SALE OF FERTILISERS AND SEEDS IN GERMANY.

In Sir Charles Oppenheimer's Report on the trade of the consular district of Frankfort-on-Main, details are given of a Bill which will be submitted to the Prussian Diet with the view of regulating the trade in fertilisers and seeds. Inasmuch as the export of seeds, as well as of fertilisers, carried on from Great Britain to Germany is rather important, it may prove useful if these proposed regulations are made known to English interested circles. The following are the main sections of this Bill :—

Commercial fertilisers, fodder, and seeds may only be sold under the following conditions :—

When selling commercial fertilisers and fodder in quantities of 25 kilos. (about 55 lbs.) or above, and of seeds in quantities of 10 kilos. (about 22 lbs.) and over, a certificate (bill, invoice, &c.) must be issued in accordance with the following regulations, which must contain :—

- (a.) For commercial fertilisers, the precise name of the fertiliser, mentioning its nature and origin, the percentage of the constituent parts which regulate its value, and the form in which these elements are found.
- (b.) For fodder, an accurate description of the materials as regards their nature and origin, giving at the same time the names of seeds or materials which have served for its manufacture, and the per-centage of the elements which regulate the value.
- (c.) For seeds, the name, nature, and origin, as well as the degree of purity to be given in per-centages, and the germinating power of the commodity. In cases where the origin cannot be given with certainty this must be stated in the certificate.

When fertilisers and feeding stuffs are sold according to analysis, it is not necessary to give the details of the percentages, but a note must be inserted on the certificate to that effect.

The sale of the following is prohibited :—(a) Commercial fertilisers, fodder, or seeds, which contain injurious elements to a prohibited amount; (b) damaged fodder, in case the goods are not distinctly described in the certificate as unfit for fodder.

[*Foreign Office Report, Annual Series, No. 1752. Price 3d.*]

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 AGRICULTURE IN NORWAY.

Mr. T. Michell, Her Majesty's Consul-General at Christiania, in a report to the Foreign Office on the trade of Norway during 1895, gives the following account of the condition of agriculture in that country :—

The past year was a very bad one for agriculture. The present position of the farmers is worse than ever before, and

help from the State is much needed, a fact proved by careful inquiries made from reliable sources on all sides. Hard-working, thrifty farmers, having no encumbrances on their farms, have just kept out of difficulties, but the others are becoming harder pressed, and, unfortunately, by far the larger number of them have their farms heavily mortgaged. This is all the more felt as other branches of trade have done well and prospered. Many reasons can be given for this deplorable state of affairs; among which are foreign competition, and unfavourable laws and regulations made during the last 20 years with regard to agriculture.

An agricultural committee has now been appointed to inquire into the real state of affairs, and to consider fresh means of helping agriculture. Other new public societies are being formed from time to time with the same object in view, and the last Storting voted considerable sums for this purpose.

Good profits were made last year in the sheep trade in the west of Norway, and more slaughtered sheep were sent to Christiania than usual. The export to England was also considerably greater than ever before. Prices ranged from 20s. to 30s.

Dairy work is on the increase; many new dairies being started in 1895, but clear profits were less on account of the lower prices for butter. Indeed, all agricultural products, except potatoes, fetched lower prices than usual. Wages increased, and this, together with the bad autumn last year, render the prospects for farmers very discouraging.

[*Foreign Office Report, Annual Series, No. 1798. Price 5½d.*]

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#### ADVANCES ON GRAIN IN RUSSIA.

Mr. John Michell, Her Majesty's Consul-General at St. Petersburg, states in a recent report to the Foreign Office that in 1893 the Russian State Bank began to make advances on grain on conditions more favourable than those exacted in 1885, when the system was first established; the grain under the modified regulation remaining in the custody and under the responsibility of the owners. During the eight years from 1885 to 1892, while the old and restrictive rules were in operation, the advances for this period only amounted in all to 2,058,333*l*. In the course of the latter months of 1893 the advances amounted to 2,816,666*l*., and in the following year to 4,604,166*l*. In 1894, owing to the advances by the State Bank, 41 per cent. of the rye and 38 per cent. of the wheat destined for sale were temporarily withdrawn from the market, and subsequently sold when prices ruled more advantageously for the sellers. Two periods are observable in these transactions; that between August and December, when there is a great demand for advances on grain, and between



December and July, when the advances are repaid, and new loans contracted on a reduced scale. The owners of the grain, it is evident, seek to derive profit from the difference between the autumnal and spring prices, which is often very considerable. The chief borrowers are proprietors of landed estates; then follow grain dealers, and, lastly, the peasant farmers, who, according to the organ of the Ministry of Finance have now recourse to the good offices of the bank in yearly increasing numbers. Dealers, however, take advantage of the privilege with greater profit to themselves than the other two classes.

[*Foreign Office Report, Annual Series, No. 1801. Price 4½d.*]

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#### EMIGRATION TO CALIFORNIA.

In a report on the distress caused to British emigrants to California by fraudulent land syndicates and emigration agencies, Mr. Warburton, Her Majesty's Consul-General at San Francisco, says that in calling attention to the frauds committed on colonists, and in giving the advice contained in this report, it is far from being his wish to depreciate the advantages of soil, climate, &c. possessed by the State. The soil is exceedingly fertile and will grow almost anything. The climate is beautiful. Minerals abound. The scenery, for its beauty, variety, and grandeur, is probably unsurpassed. The object is solely to protect too confiding fellow-countrymen against the schemes of dishonest speculators who have not only caused much misery and ruin to colonists and immigrants in the past, but who have also, as pointed out by the Californian press, worked immeasurable damage and done so much to injure the State.

The report points out that persons who intend to settle in California should not under any circumstances be induced to purchase land without having inspected it, nor until some practical knowledge has been acquired, in the State, of the kind of agriculture which it is intended to pursue. No part payment should be made until the title to the property has been fully examined by a respectable solicitor. No person should purchase land without having it surveyed, as unscrupulous owners frequently state to purchasers that a certain field contains so many acres when as a matter of fact it contains less. No one should invest all he has in a ranch, even if it be fully planted, trusting to make enough from the crop for living and contingent expenses. A reserve fund is, it is stated, absolutely essential to success in ranching.

The report also contains general information as to the prices of land and produce in recent years, as well as remarks on fruit and vine growing in California.

[*Foreign Office Report, Miscellaneous Series, No. 404. Price 1½d.*]

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## AGRICULTURAL DEPRESSION IN SPAIN.

The Foreign Office has lately published a Report on the Spanish Estimates for 1896-7, drawn up by Sir George Bonham, Bart., Secretary to Her Majesty's Embassy at Madrid.

It is stated that the agricultural condition of the country is so depressed that 6,000,000 pesetas (240,000*l.*) of the surplus is to be at once devoted to the relief of that industry. The form in which this relief is to be given is described in a Bill, which proposes to grant temporary freedom from the duty on succession and transfer of property, also from import duties on cattle, plants and seeds imported for the improvement of agriculture. Assistance is also to be given by means of increased facilities to companies for obtaining loans for agricultural purposes, the expense of so doing to be defrayed out of the sum of 6,000,000 pesetas (240,000*l.*), part of the surplus in the ordinary budget. A certain sum derived from the same source will also be employed by the Agricultural Department in the acquisition of certain plants and seeds, and with the same object of assisting agriculture the increased duties on wheat and flour imposed by the law of February, 1895, will be continued until June 30, 1897.

[*Foreign Office Report, Annual Series, No. 1776. Price 2*d.**]

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## THE ANTWERP LINSEED TRADE.

In a review of the trade statistics of Antwerp during the year 1895, Mr. G. R. de Courcy-Perry, Her Majesty's Consul-General at that port, states that, according to a gentleman who is thoroughly acquainted with the trade between Bombay and Antwerp, India has occupied, in the past, the leading position as an exporter of linseed and rapeseed; but that her supremacy in regard to the former is likely soon to be challenged by the Argentine Republic, which is making rapid strides as a producing country. Although the linseed is smaller than a fair average of Indian sorts, it is, as a rule, better cleaned than the latter, and at a difference of about 2 fr. 50 c. per 100 kilos. (one shilling per cwt.) is becoming a favourite with crushers. The crop of La Plata has now assumed such dimensions that no forecast of the probable future of prices can be made without careful inquiry into the probabilities of the return from that quarter, and, as far as can be gathered from inquiries made, the Russian and Plata crops, not the Indian, are now the dominant factors in prices in Europe. The United States also is raising a considerable quantity of linseed, and altogether it would seem as if Indian producers have now and henceforward to reckon with annually increasing competition, and must shape their course so as to hold their own in European markets.

[*Foreign Office Report, Annual Series, No. 1806. Price 1½*d.**]

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## PARLIAMENTARY PUBLICATIONS.

*Board of Agriculture,—Annual Reports of Proceedings under the Diseases of Animals Act, 1894, the Markets and Fairs (Weighing of Cattle) Acts, &c., &c., for the Year 1895.*  
[C.—8031.] Price 1s. 3d.

The first part of this volume consists of a report by Mr. A. C. Cope, the Chief Veterinary Officer of the Board, upon the various contagious diseases which affected animals in Great Britain in 1895. The report refers to the information obtained by the committee appointed to inquire into the etiology, pathology, and morbid anatomy of swine-fever, and it contains a series of coloured drawings taken from fresh specimens forwarded to the laboratory, depicting the appearance presented by swine-fever lesions in various stages of the disease, which, it is hoped, may serve as a guide to those veterinarians who, from lack of opportunity, are not familiar with the post-mortem appearances observed in this disease.

In the second section of the volume Major J. T. Tennant, the Principal of the Animals Division, reports on matter dealt with by the executive staff. During 1895 the duties performed were, as in former years, of a varied character, including the enforcement of the regulations enacted for the protection of animals from unnecessary injury or suffering when in transit either by sea or by land, the execution of certain administrative duties imposed on the Board in connection with contagious and infectious diseases of animals, and the administration of the Markets and Fairs (Weighing of Cattle) Acts. Coloured diagrams are attached to the report showing the number of outbreaks of swine fever and rabies reported in counties in Great Britain in 1895.

In the remainder of the publication an account is given of the diseases of animals in foreign countries and to a series of statistical tables showing the outbreaks of contagious diseases of animals in Great Britain, and the trade in animals of the United Kingdom and of foreign countries.

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*Report of the Royal Commission on Land in Wales and Monmouthshire.* [C.—8221.] Price 10s. 6d.

*Bibliographical, Statistical, and other Miscellaneous Memoranda, being Appendices to the above Report.* [C.—8242.] Price 5s. 4d.

The Report of the Welsh Land Commission is a volume of 960 pages, and follows the issue of five volumes of evidence. The major portion of the report is occupied by "Book I.: General View of the Conditions and Circumstances under which Land in Wales and Monmouthshire is



held, occupied, and cultivated." This portion is divided into four parts: (1) "General Conditions and Circumstances" (geographical, geological, climatic, biological, racial, ecclesiastical, educational, legal, historical); (2) "Ownership and Land-owners"; (3) "Occupation and Occupiers"; (4) "Cultivation and Farming."

"Book II." consists of the "Conclusions and Recommendations as to Legislative and Administrative Action," signed by the majority of the Commissioners; and a separate Report signed by the minority; together with a Summary of Recommendations.

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*The Annual Local Taxation Returns (England) for the Year 1894-95. Part I. [H.C.—309.] Price 11½d.*

This volume consists of two parts. The first part is the Poor Rate Return for the year ended Lady Day 1895, while the second part consists of a return relating to the valuation of property for the poor rate in 1893 and 1894.

Part I. of the Poor Rate Return gives a summary, as regards each union-county and division, of the amount of the poor rates levied during the year, and the amounts received by boards of guardians from county and borough councils under the provisions of the Local Government Act, 1888, and from other sources (except from loans) in aid of such rates; and also the amounts expended therefrom for the relief of the poor and purposes connected, or partly connected, therewith, and for other purposes. It also gives separately the amounts received, expended, and outstanding in respect of loans raised by boards of guardians.

Part II. is a Comparative Statement of the Expenditure on Relief to the Poor in the years ended Lady Day 1894 and 1895.

Part III. gives details of all the receipts and expenditure shown in Part I., exclusive of loans, with regard to each of the 648 unions and parishes under separate boards of guardians in England and Wales, and eight contributory (out-relief) unions, and the Scilly Isles.

Part IV. of the return is devoted to the loan transactions of boards of guardians, the amount raised by means of loans, and the expenditure defrayed out of loans, during the year, together with the amounts of the loans owing by the guardians at the end of the year.

It appears from the return that the total amount of poor rates raised during the year for all purposes, including the sums contributed by Government in lieu of poor rates, was 19,063,893*l*. This amount was greater than the amount raised during the preceding year by 1,320,229*l*.

A statement has also been prepared with the view of showing what was the rate per head, on the estimated

population of the metropolis, and of each union-county, of the receipts from poor rates, of the gross expenditure on relief to the poor, and the rate in the £ on rateable value of the receipts from poor rates. The union-counties have been arranged according to the amount of the rate per head on estimated population which the gross expenditure on relief represented.

It shows that the relative rates per head on the total receipts from poor rates, and on the gross expenditure for relief, varied greatly in different union-counties, and that in some cases the rate per head for relief was considerably less than half the rate per head of the rates raised, whilst in Berkshire the rate per head of relief represented about three-fourths of the rate per head of the rates raised. The highest rate per head of the poor rates raised was in London, where it amounted to 24s. 9¼d. per head; the lowest was in Nottingham, where it amounted to only 7s. 1½d. per head.

The highest rate per head for expenditure on poor relief was 13s. 6d. in London, and the lowest 4s. 2d. in the West Riding of Yorkshire. The rate in the £ on rateable value of the poor rates raised also varied considerably in the different union-counties. In the metropolis and 30 other union-counties it ranged between 2s. and 3s. 3½d. in the £, whilst in Westmorland it was only 1s. 0½d. in the £. It is also observed that there were considerable differences in the several union-counties between the proportions which the rate per head on the estimated population bore to the rate in the £ on the rateable value of the amounts raised from poor rates.

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*Agricultural Statistics, Ireland, 1896. General Abstracts showing the Acreage under Crops; also the Number and Description of Live Stock in each County and Province, 1895-6. [C.—8196.] Price 2½d.*

This is the annual return relating to Irish agriculture issued by the Registrar-General in Dublin.

The total extent under crops in 1896 is 4,842,944 acres, being a net decrease on the extent in 1895 of 37,583 acres, or 0·8 per cent. There was a decrease in Leinster of 19,548 acres, or 1·5 per cent.; in Ulster of 13,208 acres, or 0·8 per cent.; in Munster of 8,228 acres, or 0·7 per cent.; and in Connaught an increase of 3,401, or 0·5 per cent.

In 1895 the extent returned under grass was 10,280,424 acres, in 1896 the amount returned is 10,332,894 acres, being an increase of 52,470 acres; the extent returned as fallow in 1895 was 18,431 acres, and in 1896, 18,280 acres; the extent under woods and plantations was 308,928 acres in 1895, and 307,266 acres in 1896; and the extent returned under "Turf

Bog, Marsh, Barren Mountain Land, &c." was 4,845,034 acres in 1895, and 4,831,960 acres in 1896 being a decrease of 13,074 acres; of the acreage thus returned in 1896, 1,192,675 acres have been entered by the enumerators as turf bog, 442,330 acres as marsh, and 2,252,970 acres as barren mountain land.

Crop.					Acres.	Crop.					Acres.
Wheat	-	-	-	-	37,919	Turnips	-	-	-	-	308,494
Barley	-	-	-	-	173,014	Mangel wurzel and beetroot	-	-	-	-	54,280
Oats	-	-	-	-	1,193,604	Cabbages	-	-	-	-	44,196
Bere and Rye	-	-	-	-	14,095	Vetches and rape	-	-	-	-	10,313
Beans and Peas	-	-	-	-	2,089	Carrots, parsnips, and other green crops.	-	-	-	-	24,782
Flax	-	-	-	-	72,301	Clover, sainfoin, and grasses under rotation.	-	-	-	-	654,894
Potatoes	-	-	-	-	705,652	Permanent pasture or grass not broken up in rotation.	-	-	-	-	1,547,311

Compared with 1895 there appears an increase of 1,387 acres in the acreage under wheat; a decrease of 22,797 acres under oats; an increase of 1,364 acres under barley; an increase of 2,436 acres under bere and rye; and a decrease of 763 acres under beans and peas; showing a net decrease of 18,373 acres in the extent under cereal crops.

The acreage under mangel wurzel has increased by 1,253 acres; cabbage by 4,478 acres; vetches and rape by 495 acres. The extent under potatoes has decreased by 4,834 acres; turnips by 4,787 acres; and carrots, parsnips, and other green crops by 642 acres, leaving a net decrease of 4,037 acres in the extent under green crops.

The acreage under flax in 1895 was 95,203 acres, and in 1896 the extent returned under this crop is 72,301 acres, being a decrease of 22,902 acres.

In the returns the area under meadow and clover is shown as the extent "For Hay only," subdivided under the headings "Clover, Sanfoin, and Grasses under rotation," and "Permanent Pasture, or Grass not broken up in rotation." The extent for hay under "Clover, &c.," in 1895 was 635,586 acres, and in 1896 it is 654,894 acres, being an increase of 19,308 acres. The area for hay on permanent pasture in 1895 was 1,558,890 acres, and in 1896 it is 1,547,311 acres, showing a decrease of 11,579 acres. There is, therefore, an increase of 7,729 acres in the total area under meadow and clover.

As regards the returns of live stock, it appears that between 1895 and 1896 there has been a decrease of 598 in the number of horses and mules. Cattle exhibit an increase of 49,709, sheep an increase of 167,245, and there has been an increase of 67,044 in the number of pigs. Of the 17,545,771 poultry enumerated in 1896, 1,090,539 were turkeys, 2,142,186 were geese, 2,973,233 were ducks, and 11,339,813 were ordinary fowl.



*Agricultural Statistics, Ireland, 1896. Report and Tables relating to Migratory Agricultural Labourers; showing their distribution in Ireland when at home; their relative proportion to the population; their social position when at home as measured by the extent of their holdings, if any; their destination; and the number who left the several ports from 1st January to 31st August 1896. [C.—8197.] Price 2½d.*

This report shows that there were in June of this year 16,312 persons, or 3·5 per 1,000 of the population according to the Census of 1891, who had either left or intended to leave their homes to seek employment as agricultural labourers elsewhere; of these, 3,593 had not left their homes at the time of the enumeration. The corresponding number for 1895 was 14,119, showing an increase of 2,193 in the present year. The proportion for the whole of Ireland is but 3·5 per 1,000, but when considered by provinces it is found that the proportion in Connaught is 18·3 per 1,000; in Ulster it is 1·7; in Munster, 0·1; and in Leinster, 0·04.

Of the total number, 78 per cent. sought work in England, 19·6 per cent. in Scotland, and 2·4 per cent. in Ireland.

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*Scotland. Report of the Committee of Council on Education for the year 1895–96. [C.—8071.] Price 2s. 6d.*

This report states that there were 692,202 children on the registers of the inspected schools. Examinations were held in the principles of agriculture under Art. 21 of the Code of the Scotch Education Department. Of 2,488 pupils who were examined in the first stage of this subject 2,128 passed, in the second stage there were 1,686 passes out of 1,909, and 729 out of 834 in the third stage, the total number of passes being 4,543 out of 5,231 presentations; this is a decrease on the previous year, when out of a total of 5,696 candidates 4,966 were successful.

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*Woods and Forests. Seventy-fourth Report of the Commissioners of Her Majesty's Woods, and Forests, and Land Revenues. [H.C. 266.] Price 1s. 7½d.*

The first part of this volume contains the Report of the Commissioner in charge of the Woods, Royal Forests, Crown, and certain other allotments in England; of the Land Revenue of the Crown in Scotland, Ireland, Wales, and in the Isles of Man and Alderney; and of the fee farm and other unimprovable rents of the Crown in Wales, under a Warrant of the Lords Commissioners of Her Majesty's Treasury, dated the

6th May 1895. The second part of the Report relates to the Land Revenues of the Crown in England.

The account of receipts and expenditure in respect of the income of the Land Revenue for the year ending 31st March 1896 shows a total receipt of 529,134*l.* 8*s.* 9*d.* from Woods, Forests, and Land Revenues; a total expenditure of 103,573*l.* 5*s.* 2*d.*; and a surplus of 415,000*l.*, which was paid over to the Exchequer.

The total receipts from agricultural land in 1895-96 were 71,263*l.*, derived from 66,875 acres, giving an average rental of about 21*s.* 6*d.* per acre. An allowance of 5,207*l.* 12*s.* was made to Crown tenants in consequence of the continued agricultural depression.

In that portion of the report relating to Crown property in Wales Mr. Stafford Howard refers to the planting operations on parts of the Crown wastes in Wales. The small plantation which was formed at Sychnant is reported to be doing well on the whole, though, as was to be expected, the severe winter of 1894-95, and the very dry weather experienced both last year and this in the spring months, have proved fatal to many of the young trees.

Communications have been made to various owners of common rights upon the adjoining mountain of Maentwrog, with a view to arrange for the planting of a portion of the ground by the Crown, but as yet the necessary consents of the parties interested have not been obtained, some of them being altogether opposed to the idea. The subject, however, has not been dropped, and communications are still proceeding with the object of securing agreement if possible.

There seems to be a misconception in some quarters in regard to the extent of the power of the Crown in this matter. The area of land in Wales of which the Crown has the absolute freehold is comparatively small, and may be left out of account in considering any general scheme of planting. The Crown has the soil and freehold of a considerable area, but it is subject to common rights over the surface. Planting could be carried out in this common land only with the consent of the owners of the farms to which common rights attach, or by some scheme of enclosure and regulation.

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*Seventh Report of Her Majesty's Commissioners appointed to carry out a Scheme of Colonisation in the Dominion of Canada of Crofters and Cottars from the Western Highlands and Islands of Scotland.* [C.—8220.] Price 2*d.*

This publication contains information relating to the settlements at Killarney, in Manitoba, and at Saltcoats, in the North

West Territories of Canada, for the year 1895. The former Colony was established in the summer of 1888 and the latter in the spring of 1889. Statements are appended showing the position of the settlement in 1895, and giving the acreage under various crops, live stock on the farms, and other information.

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*Weights and Measures. Report by the Board of Trade on their Proceedings and Business under the Weights and Measures Acts. [H.C.—373.] Price 4d.*

This report is made under the 33rd section of the Weights and Measures Act, 1878, and contains, *inter alia*, a list of districts of local authorities for which local standards have been verified or re-verified by the Board of Trade, or locally compared, during the 12 months ending 13th August 1896; and the names and addresses of inspectors of weights and measures appointed by local authorities.

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## IMPORTS OF AGRICULTURAL PRODUCE.

I.—STATEMENT showing the NUMBER of ANIMALS imported into GREAT BRITAIN from IRELAND during the first Ten Months of the year 1896, compared with the corresponding periods of 1895 and 1894.

Animals.	Ten Months ended 31st October 1896.	Ten Months ended 26th October 1895.	Ten Months ended 27th October 1894.
Cattle - . . . . .	551,608	607,740	652,167
Sheep - . . . . .	692,949	600,747	870,922
Swine - . . . . .	457,722	404,380	431,779
Goats - . . . . .	4,059	4,316	6,525
Horses - . . . . .	36,069	30,824	30,299

II.—STATEMENT showing the QUANTITY of HAY imported into the UNITED KINGDOM from the under-mentioned Countries in the Ten Months ending 31st October 1896, and in the corresponding periods in 1895 and 1894.

(Furnished by the Board of Customs.)

Countries whence Exported.	Ten Months ended 31st October 1896.	Ten Months ended 31st October 1895.	Ten Months ended 31st October 1894.
Algeria - . . . . .	Tons. 5,263	Tons. 6,850	Tons. 2,636
Belgium - . . . . .	8,651	4,233	3,511
Canada - . . . . .	2,306	15,820	24,519
France - . . . . .	17,533	12,468	5,213
Germany - . . . . .	8,807	2,897	1,863
Holland - . . . . .	30,231	16,177	12,485
United States - . . . . .	4,635	34,593	144,058
Other Countries - . . . . .	9,102	4,698	43,211
Total - . . . . .	86,618	97,736	237,496

II.—STATEMENT showing the QUANTITIES of CERTAIN ARTICLES of AGRICULTURAL PRODUCE IMPORTED into the UNITED KINGDOM in the Ten Months ending 31st October 1896, and in the corresponding periods in 1895 and 1894.

(Compiled from the Trade and Navigation Returns.)

Articles.	Ten Months ending 31st October 1896.	Ten Months ending 31st October 1895.	Ten Months ending 31st October 1894.
Horses - - - - - No.	37,728	29,628	19,764
Cattle - - - - - "	484,913	343,796	419,110
Sheep - - - - - "	688,961	856,176	386,415
Bacon - - - - - cwts.	3,798,754	3,351,874	3,182,316
Beef:			
Salted - - - - - "	207,858	179,425	198,906
Fresh - - - - - "	2,193,571	1,799,803	1,771,347
Hams - - - - - "	1,205,262	1,083,987	973,722
Meat unenumerated:			
Salted or fresh - - - - - "	228,857	199,372	154,260
Preserved, otherwise than by salt- ing - - - - - "	595,216	705,706	437,569
Mutton, fresh - - - - - "	2,396,922	2,201,018	1,907,959
Pork:			
Salted (not Hams) - - - - - "	213,926	187,730	193,821
Fresh - - - - - "	211,405	210,152	136,692
Rabbits - - - - - "	127,895	81,154	76,773
Butter - - - - - "	2,533,777	2,347,312	2,155,135
Margarine - - - - - "	759,349	763,490	933,922
Cheese - - - - - "	1,840,614	1,740,718	1,893,165
Milk, condensed or preserved - - - - - "	500,565	448,493	449,745
" and cream, fresh - - - - - gallons	14,523	123,465	109,975
Eggs - - - - - gt. hundreds	10,773,468	10,487,004	9,893,043
Corn:			
Wheat - - - - - cwts.	56,394,720	70,938,615	60,549,257
Wheat Meal and flour - - - - - "	17,010,620	15,292,870	15,885,255
Barley - - - - - "	16,105,112	18,642,237	25,837,986
Oats - - - - - "	13,129,400	12,722,110	12,131,130
Maize - - - - - "	42,118,580	27,279,770	32,046,484
Fruit:			
Apples - - - - - bushels	3,584,158	2,304,789	3,065,023
Pears - - - - - "	460,801	376,102	1,233,655
Hops - - - - - cwts.	130,156	130,491	107,721
Lard - - - - - "	1,512,429	1,432,374	1,181,946
Onions - - - - - bushels	4,918,521	4,676,653	4,372,614
Potatoes - - - - - cwts.	2,171,773	3,643,385	2,392,504
Tallow and Stearine - - - - - "	1,802,556	1,734,472	1,611,036
Hides, wet and dry - - - - - "	764,671	1,101,054	883,662
Wool, sheep and lambs' - - - - - lbs.	600,262,272	668,950,442	619,987,051
Poultry and game - - - - - value £	362,782	327,964	231,942
Vegetables (unenumerated) - - - - - "	1,148,478	1,147,499	966,623

## PRICES OF LIVE STOCK AS RETURNED UNDER THE WEIGHING OF CATTLE ACT.

The returns of prices under the Markets and Fairs (Weighing of Cattle) Act, 1891, for the third quarter of 1896 are now available. The particulars rendered to the Board of Agriculture by the market authorities and auctioneers from the 19 scheduled places in Great Britain continue to show an increase, compared with the similar quarters of previous years, in the numbers of cattle, sheep, and swine weighed alive, and in a larger number of cases than before the prices of these animals have been given. This increase is relatively greater than the absolute numbers recorded as passing over the weighbridge would of themselves indicate, since there were fewer cattle and sheep entering the several markets which supply reports in these three months of 1896 than in the like period of either 1895 or 1894.

The totals of the returns received for the whole of Great Britain may be shown as under:—

Animals.	3rd Quarter, 1896.	3rd Quarter, 1895.	3rd Quarter, 1894.
<b>CATTLE :</b>	No.	No.	No.
Entering markets - - -	227,346	270,831	279,586
Weighed - - -	24,471	22,320	20,611
Prices returned - - -	22,481	19,345	18,408
Prices returned with quality distinguished.	16,857	13,815	12,216
<b>SHEEP :</b>			
Entering markets - - -	1,424,166	1,444,156	1,502,874
Weighed - - -	11,028	9,727	9,278
Prices returned with quality distinguished.	8,476	7,348	6,526
<b>SWINE :</b>			
Entering markets - - -	46,431	48,127	20,676
Weighed - - -	1,346	1,014	743
Prices returned - - -	503	453	157
Prices returned with quality distinguished.	503	2	3

As on former occasions the much larger use of the weighbridge in Scotland than in England is clearly brought out in the returns received. Taking the case of cattle separately the comparison



in England alone between the three quarters now contrasted stands thus:—

Cattle at Scheduled Places in ENGLAND.	3rd Quarter, 1896.	3rd Quarter, 1895.	3rd Quarter, 1894.
Number entering markets - - -	170,820	210,373	227,194
Number weighed - - -	6,573	6,401	5,533
Prices returned with quality distinguished.	4,939	3,619	3,419

The Scotch record is in every way more satisfactory, the returns for the three quarters being as under:—

Cattle at Scheduled Places in SCOTLAND.	3rd Quarter, 1896.	3rd Quarter, 1895.	3rd Quarter, 1894.
Number entering markets - - -	56,526	60,458	52,392
Number weighed - - -	17,898	15,919	15,078
Prices returned - - -	17,542	15,726	14,989
Prices returned with quality distinguished.	11,918	10,196	8,797

Examining in more detail the position at particular markets, it will be observed from the table appended to this article that in only two of the English markets—London and Liverpool—have the numbers of cattle weighed reached four figures. These two markets, although accounting for only 35,000 head of cattle out of 171,000 entering the markets in England, return 5,197 instances of weighing out of the total of 6,573 reported in the quarter. On the other hand, in only one of the five Scotch returning markets have fewer than 2,500 head of cattle been weighed in the three months, and the total reaches nearly 18,000 head out of 56,500 shown in the markets, or nearly one in three, against one in twenty-six only put to the test of the weighbridge in England.

Sheep to the number of more than 3,000 were reported to have been weighed at four markets in England, but only in London and Liverpool have the numbers any significance, and it is to be regretted that in the Metropolitan Market, out of 2,280 cases where sheep were weighed, prices were reported in only 77 instances. In Scotland nearly 8,000 sheep were weighed, and with comparatively few exceptions prices were reported.

With insignificant exceptions the weighing of pigs seems restricted to the markets of Leeds and Newcastle.

The customary table below gives both per stone and per cwt. the average prices during the third quarter of 1896 of fat cattle at the markets whence quotations have been previously published. The range for inferior grades of cattle runs from 24s. per cwt. to 31s. 8d. For second class stock, the lowest price, 29s. 4d., comes from Liverpool and the highest, 33s. 2d.,

from Edinburgh. The range in price of the group of cattle classed as prime is narrower than in the "inferior" grades; the quotations being given as 32s. per cwt. at Leeds and Liverpool, and varying from 33s. 6d. to 36s. per cwt. elsewhere, the highest average being reported from London.

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Leeds - -	7	s. d. 3 6	s. d. 28 0	50	s. d. 3 9	s. d. 30 0	127	s. d. 4 0	s. d. 32 0
Liverpool - -	—	—	—	598	3 8	29 4	1,494	4 0	32 0
London - -	14	3 4½	27 0	817	4 0½	32 2	781	4 6	36 0
Newcastle - -	6	3 3½	26 4	20	3 10½	31 2	110	4 3½	34 2
Shrewsbury - -	15	3 1½	24 10	54	3 9½	30 4	3	4 2½	33 6
Aberdeen - -	774	3 0	24 0	2,698	3 11½	31 8	1,630	4 4½	34 10
Dundee - -	116	3 3½	26 4	1,686	3 11½	31 10	1,213	4 3	34 0
Edinburgh - -	—	—	—	2,235	4 1½	33 2	126	4 3½	34 6
Glasgow - -	53	3 11½	31 8	296	4 0½	32 4	270	4 4½	35 2
Perth - -	74	3 9	30 0	300	4 0½	32 2	263	4 3½	34 6

Comparing these quotations with those of the same quarter of the immediately preceding year, a general decline of values, with only insignificant exceptions, is apparent. The details are shown as under:—

PLACES.	INFERIOR or Third Quality.		GOOD or Second Quality.		PRIME or First Quality.	
	1896.	1895.	1896.	1895.	1896.	1895.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
Leeds - - -	28 0	—	30 0	—	32 0	—
Liverpool - -	—	—	29 4	28 6	32 0	34 8
London - -	27 0	29 4	32 2	34 6	36 0	38 0
Newcastle - -	26 4	—	31 2	34 10	34 2	37 10
Shrewsbury - -	24 10	27 2	30 4	30 2	33 6	35 8
Aberdeen - -	24 0	26 3	31 8	34 7	34 10	38 0
Dundee - -	26 4	28 2	31 10	34 1	34 0	36 6
Edinburgh - -	—	—	33 2	33 11	34 6	36 4
Glasgow - -	31 8	33 6	32 4	36 0	35 2	36 10
Perth - - -	30 0	33 8	32 2	35 5	34 6	37 1

It may be again pointed out that in a certain number of instances the bargains reported were on the basis of a definite price per live cwt. This occurs more especially in the two

higher grades ; since in 381 instances in cattle of the second quality, and in 377 cases of prime stock, this method of business was reported to have been resorted to in the three months under review.

Apart from fat stock, the weighbridge is reported to have been called into use at Shrewsbury, Edinburgh, and Dundee, in the case of 452 store cattle. At the first-named town 169 of inferior grade were sold at a rate of 26s. 2*d.* per cwt., and 109 stores of second quality at 28s. 10*d.* In Edinburgh 154 stores altogether were reported as sold in this way. These were classed as of second quality, and realised 29s. per cwt.

The usual detailed table, showing the numbers of animals entering, weighed, and priced at every scheduled place in the three months now reported on, affords means of ascertaining in what localities the use of the weighbridge is becoming more or less familiar, and where the sellers of live stock remain, with few exceptions, contented to dispense with its employment in the transaction of business.



**Cattle, Sheep, and Swine**, entering the **MARKETS** and **MARTS** of the under-mentioned Places with the Number **WEIGHED**, as received from the Market Authorities in the **Third Quarter 1896**, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
<b>ENGLAND.</b>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Ashford " "	2,912	5	—	31,223	—	—	5,013	7	—
Birmingham " "	5,052	—	—	33,533	—	—	1,326	—	—
Bristol " "	7,230	5	5	35,788	—	—	7	—	—
Leicester " "	11,546	232	169	23,388	110	110	1,730	29	29
Leeds " "	7,159	184	184	36,195	10	10	2,967	835	—
Lincoln " "	1,394	—	—	15,800	—	—	2,547	—	—
Liverpool " "	15,223	2,092	2,092	139,349	676	676	—	—	—
London " "	19,415	3,105	1,612	178,410	2,280	77	855	—	—
Newcastle-upon-Tyne	23,221	136	136	108,199	—	—	6,039	353	353
Norwich " "	12,856	12	12	75,542	—	—	6,844	—	—
Salford " "	27,941	305	305	203,842	—	—	529	—	—
Shrewsbury " "	5,659	415	350	21,460	—	—	3,084	—	—
Wakefield " "	19,390	38	31	47,577	—	—	4,530	—	—
York " "	11,792	41	43	53,264	—	—	1,587	—	—
<b>SCOTLAND.</b>									
Aberdeen " "	12,939	5,102	5,102	87,119	5,576	5,471	4,252	—	—
Dundee " "	4,042	3,957	3,035	6,328	528	432	384	6	6
Edinburgh " "	13,917	6,312	*2,523	62,383	—	—	1,244	—	—
Glasgow " "	14,157	883	619	183,460	227	109	1,911	19	18
Perth " "	11,471	2,544	*637	71,306	1,621	1,591	1,573	97	97
<b>TOTAL for ENGLAND</b>	170,820	6,573	4,939	1,013,570	3,076	873	37,067	1,224	382
<b>TOTAL for SCOTLAND</b>	56,526	17,898	*11,918	410,596	7,952	7,603	9,364	122	121
<b>Total</b> " "	227,346	24,471	*16,857	1,424,166	11,028	8,476	46,431	1,346	503

\* Prices for 3,717 cattle in addition to the above were quoted from Edinburgh, and for 1,907 cattle from Perth, but without distinguishing the quality.

## PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

## I.—PRICES OF MEAT.

AVERAGE PRICES OF DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Second and Third Quarters of 1896.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	2ND QUARTER, 1896.	3RD QUARTER, 1896.
<b>BEEF:—</b>	<i>s. d. s. d.</i>	<i>s. d. s. d.</i>
Scotch, short sides - -	4 0 to 4 3	4 2 to 4 5
„ long sides - -	3 7 „ 3 9	3 8 „ 3 11
English, Prime - -	3 6 „ 3 9	3 7 „ 3 9
Cows and Bulls - -	1 8 „ 2 8	1 10 „ 2 8
American, Birkenhead killed -	2 9 „ 3 1	3 0 „ 3 4
„ Deptford killed -	2 10 „ 3 2	3 0 „ 3 4
„ Refrig. hind-qrs. -	3 3 „ 3 7	3 4 „ 3 8
„ „ fore-qrs. -	1 7 „ 1 10	1 9 „ 2 1
Australian, Refrig. hind-qrs. -	1 10 „ 1 11	1 9 „ 1 11
„ „ fore-qrs. -	1 1 „ 1 2	1 2 „ 1 5
New Zealand, Refrig. hind-qrs. -	2 1 „ 2 3	—
„ „ fore-qrs. -	1 2 „ 1 3	—
<b>MUTTON:—</b>		
Scotch, Prime - -	4 3 „ 4 9	4 4 „ 4 9
English, Prime - -	3 11 „ 4 5	3 11 „ 4 5
Ewes - -	2 10 „ 3 5	2 11 „ 3 5
Dutch - -	} 3 8 „ 4 3	{ 3 6 „ 4 1
German - -		
New Zealand - -	1 8 „ 2 3	2 0 „ 2 5
Australian - -	1 5 „ 1 6	1 9 „ 1 10
River Plate, Frozen - -	1 5 „ 1 6	1 9 „ 1 10
„ „ Town killed - -	3 1 „ 3 4	3 2 „ 3 5
<b>LAMB:—</b>		
English - -	5 5 „ 6 6	4 5 „ 5 2
New Zealand - -	2 11 „ 3 4	2 8 „ 3 1
<b>VEAL:—</b>		
English - -	3 9 „ 4 7	3 11 „ 4 5
Foreign - -	3 2 „ 3 8	3 2 „ 3 9
<b>PORK:—</b>		
English, small - -	3 1 „ 3 5	3 0 „ 3 5
„ medium and large - -	} 2 5 „ 2 11	2 6 „ 2 11
Foreign - -		

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE AND SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
3rd Quarter 1895	2 8	3 11	4 7	3 8	5 1	5 9
4th Quarter „	2 5	3 10	4 7	3 8	5 5	5 11
1st Quarter 1896	2 4	3 10	4 5	3 4	5 2	5 8
2nd Quarter „	2 4	3 8	4 4	3 3	4 9	5 3
3rd Quarter „	2 4	3 9	4 4	3 2	4 8	5 4

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during the under-mentioned Quarters of 1895 and 1896.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
3rd Quarter 1895 -	3 2	to 3 10	3 6	to 5 2	2 8	to 4 0	3 4	to 4 8
4th Quarter „ -	2 8	„ 3 6	3 4	„ 4 10	2 8	„ 3 8	3 0	„ 4 6
1st Quarter 1896 -	2 0	„ 3 2	3 0	„ 4 10	2 8	„ 3 8	3 0	„ 4 6
2nd Quarter „ -	2 0	„ 3 4	3 0	„ 5 0	2 4	„ 3 6	3 8	„ 4 10
3rd Quarter „ -	2 6	„ 3 4	3 4	„ 4 10	2 4	„ 3 8	3 4	„ 4 6

\* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the Liverpool Abattoir, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.



I.—PRICES OF MEAT—*continued*.

## BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the BERLIN CATTLE MARKET in the four under-mentioned months of 1896.

MONTHS.	CATTLE.				SHEEP.			
	Per Cwt.				Per Cwt.			
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
July - - - -	56	0	to 58	7	49	8	to 51	2
August - - - -	58	7	„ 61	4	52	2	„ 56	3
September - - - -	57	3	„ 61	7	50	2	„ 54	3
October - - - -	56	5	„ 59	8	50	4	„ 53	9

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirthschaftliche Presse*.

## PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the four under-mentioned months of 1896.

MONTHS.	OXEN.		CALVES.		SHEEP.		PIGS.	
	Per Cwt.		Per Cwt.		Per Cwt.		Per Cwt.	
LIVE WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
July - - -	32	1	34	10	41	7	29	7
August - - -	31	3	34	1	41	5	31	2
September - - -	33	1	35	3	41	3	30	7
October - - -	32	9	36	5	40	6	27	8
DEAD WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
July - - -	57	10	58	2	75	9	43	10
August - - -	56	7	61	6	74	9	45	0
September - - -	57	3	63	9	72	11	43	4
October - - -	56	6	68	3	72	4	41	3

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.

I.—PRICES OF MEAT—*continued.*

CHICAGO.

PRICES of CATTLE at CHICAGO per Cwt. (Live Weight) in the  
under-mentioned months of 1896.

Months.	Good Dressed Beef and Shipping Steers.				Export Cattle.				Extra Prime Cattle.			
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
July - -	19	2	to	20	18	0	to	21	21	0	to	21
				6				0				11
August - -	18	2	„	21	18	8	„	22	21	8	„	23
				6				5				4
September -	17	6	„	22	18	8	„	23	22	2	„	24
				2				4				6
October - -	18	0	„	22	17	9	„	23	23	4	„	24
				2				4				9

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson & Co.,  
of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per *Cwt.*, of various Kinds of DEAD MEAT  
Imported into the United Kingdom from FOREIGN COUNTRIES  
and BRITISH POSSESSIONS in the under-mentioned Quarters  
of 1895 and 1896.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.		PORK.		BACON.	HAMS.
	Fresh.	Salted.	Fresh.		Fresh.	Salted.		
3rd Quarter 1895 -	<i>s. d.</i> 38 3	<i>s. d.</i> 25 5	<i>s. d.</i> 34 8		<i>s. d.</i> 48 11	<i>s. d.</i> 21 7	<i>s. d.</i> 41 7	<i>s. d.</i> 46 1
4th Quarter „ -	38 9	26 3	34 11		45 11	22 3	39 4	45 11
1st Quarter 1896 -	37 7	26 0	33 2		45 7	25 11	33 3	41 9
2nd Quarter „ -	38 7	24 10	32 6		46 5	21 6	35 1	41 6
3rd Quarter „ -	38 5	23 6	33 7		47 0	20 5	34 5	43 1

## II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,\* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1896, 1895, and 1894.

QUARTER ENDED.	PRICES.			QUANTITIES.		
	1896.	1895.	1894.	1896.	1895.	1894.
<b>Wheat.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	25 8	20 1	25 1	448,043	652,874	613,313
Midsummer - - -	25 2	23 1	24 4	381,559	496,615	429,450
Michaelmas - - -	23 7	23 11	22 11	505,988	331,223	313,288
Christmas - - -	—	25 1	19 2	—	417,671	600,773
<b>Barley.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	22 5	21 6	23 1	955,902	1,035,588	671,620
Midsummer - - -	21 4	20 3	25 2	92,739	79,936	40,863
Michaelmas - - -	21 0	21 3	22 1	165,722	141,985	95,121
Christmas - - -	—	24 10	22 7	—	2,169,067	1,921,744
<b>Oats.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - - -	13 9	13 9	18 1	259,564	250,838	193,922
Midsummer - - -	14 3	15 2	18 7	99,672	111,424	61,862
Michaelmas - - -	14 6	15 1	17 11	94,383	88,312	70,824
Christmas - - -	—	13 10	13 10	—	215,365	239,139

\* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

## II.—CORN PRICES :—HARVEST YEAR.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels, computed from the Weekly Averages of Corn Returns from the 196 Returning Markets, together with the QUANTITIES returned as sold at such Markets during each of the Harvest Years ending 31st August 1890 to 1896.

HARVEST YEARS.	PRICES.			QUANTITIES.		
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
1889-90 - - -	31 2	28 10	18 6	3,289,806	3,281,141	558,053
1890-91 - - -	35 5	28 0	19 1	3,496,788	3,659,382	602,887
1891-92 - - -	33 4	27 2	20 8	3,267,038	3,260,327	488,830
1892-93 - - -	26 8	24 10	18 9	2,676,227	3,383,094	547,412
1893-94 - - -	25 5	26 5	18 4	2,087,062	2,876,977	542,425
1894-95 - - -	21 5	21 5	14 8	2,180,959	3,136,415	693,121
1895-96 - - -	24 10	22 4	14 1	1,640,943	3,366,364	672,547



## II.—CORN PRICES :—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1896, and in the Corresponding Weeks in 1895 and 1894.

Weeks ended (in 1896)	Wheat.			Barley.			Oats.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Jan. 4 -	25 2	20 4	26 4	24 7	21 5	28 10	13 10	14 2	17 8
" 11 -	25 4	20 8	26 4	23 11	21 3	23 10	13 9	13 9	18 0
" 18 -	25 10	20 8	26 3	23 6	21 8	29 2	13 11	14 0	18 0
" 25 -	26 1	20 9	26 1	23 7	21 11	29 1	13 10	13 10	18 0
Feb. 1 -	26 3	20 6	25 7	23 1	21 5	28 11	14 1	13 10	18 1
" 8 -	26 4	19 11	25 3	22 5	21 8	28 8	14 0	13 6	17 10
" 15 -	26 7	19 10	24 10	21 11	21 10	28 3	14 0	13 8	18 0
" 22 -	26 3	19 10	24 5	21 10	22 2	28 0	13 9	13 9	18 4
" 29 -	25 6	19 10	24 3	21 10	21 9	27 5	13 10	14 0	18 5
Mar. 7 -	25 4	19 9	24 3	21 5	21 6	27 0	13 8	13 9	18 4
" 14 -	25 5	19 9	24 3	21 3	21 7	27 5	13 10	13 8	18 4
" 21 -	25 1	20 6	24 4	21 1	20 10	26 11	13 9	13 10	18 1
" 28 -	24 10	20 3	24 6	21 4	20 10	27 1	13 4	14 0	18 0
Apr. 4 -	24 7	20 4	24 6	21 10	20 11	26 7	13 3	14 5	18 3
" 11 -	24 6	20 4	24 7	21 0	21 3	27 10	13 1	13 11	18 2
" 18 -	24 11	20 6	24 8	23 6	21 2	28 6	14 0	14 5	18 4
" 25 -	25 6	20 9	24 10	21 0	20 8	26 3	13 11	14 2	18 3
May 2 -	25 8	21 4	24 10	22 6	20 5	26 1	14 3	14 8	18 7
" 9 -	25 7	22 4	24 9	21 0	20 8	24 11	14 4	15 3	18 9
" 16 -	25 7	22 10	24 5	21 0	20 6	25 0	14 5	15 3	18 9
" 23 -	25 6	23 5	24 4	21 8	20 1	24 0	14 6	15 9	18 10
" 30 -	25 4	24 5	23 11	21 5	19 4	23 11	14 10	15 10	18 9
June 6 -	25 5	25 9	23 9	21 6	19 9	26 11	14 8	15 10	18 6
" 13 -	25 1	26 2	23 10	19 3	19 4	24 11	14 9	15 11	18 9
" 20 -	25 1	26 5	23 11	22 8	19 5	22 5	15 1	16 1	18 10
" 27 -	24 10	26 1	24 1	19 5	20 3	20 5	14 10	16 7	19 2
July 4 -	24 9	25 7	24 6	16 2	19 9	23 7	15 0	16 4	19 6
" 11 -	24 7	25 0	24 5	18 11	20 8	21 0	14 9	15 7	19 7
" 18 -	24 2	24 4	24 6	18 3	18 6	19 6	15 4	16 6	19 7
" 25 -	24 0	24 1	24 8	19 8	19 10	22 5	15 0	15 11	20 5
Aug. 1 -	23 8	24 2	24 4	19 7	18 2	21 4	14 10	15 9	19 8
" 8 -	23 6	24 3	24 4	19 5	20 0	21 4	14 9	16 5	19 9
" 15 -	22 11	24 6	24 5	21 1	19 3	16 5	14 6	16 1	18 9
" 22 -	22 4	24 5	24 1	21 11	20 8	22 3	14 3	15 7	17 8
" 29 -	22 5	23 10	22 7	21 10	23 5	24 1	13 7	14 5	17 1
Sept. 5 -	23 1	23 1	21 7	21 11	23 4	24 11	13 11	14 4	16 6
" 12 -	23 9	22 10	20 5	23 4	23 11	23 9	14 1	13 8	15 9
" 19 -	24 0	22 7	19 8	24 8	24 2	23 5	14 6	13 3	15 2
" 26 -	24 4	23 0	18 9	26 3	24 8	23 5	14 1	13 2	14 3
Oct. 3 -	25 2	23 6	18 2	28 7	25 1	23 7	14 9	13 6	14 0
" 10 -	26 7	24 3	17 7	29 5	25 7	23 10	15 3	13 4	13 5
" 17 -	27 10	24 11	17 6	29 7	25 8	23 11	15 9	13 5	13 6
" 24 -	28 11	25 5	17 7	28 6	25 4	23 8	16 0	13 7	13 3
" 31 -	30 9	25 11	18 0	28 3	25 6	23 8	17 3	13 10	13 6
Nov. 7 -	31 6	26 4	18 4	27 5	25 4	23 0	17 6	14 3	13 7
" 14 -	31 9	26 1	19 1	27 3	25 1	22 7	17 7	14 4	13 10
" 21 -	32 11	25 7	19 11	26 8	25 1	22 4	17 7	14 4	14 3
" 28 -	33 4	25 2	20 7	26 9	24 7	22 0	17 7	14 3	14 3

## II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the Second and Third Quarters of 1896.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	Second Quarter, 1896.	Third Quarter, 1896.
	<i>s. d.</i>	<i>s. d.</i>
ARGENTINE REPUBLIC - - - -	25 6	23 9
CHILE - - - - -	25 11	25 8
ROUMANIA - - - - -	24 3	24 3
RUSSIA - - - - -	24 7	23 7
TURKEY - - - - -	24 0	22 1
UNITED STATES OF AMERICA { Atlantic -	25 7	24 8
{ Pacific -	26 2	25 6
INDIA, BRITISH - - - - -	25 1	24 11
NORTH AMERICA, BRITISH - - - -	25 8	24 2

## II.—CORN PRICES:—BELGIUM, FRANCE, AND ENGLAND.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND in the four under-mentioned months of 1896.

Month.	Belgium.	France.	England.
WHEAT.			
1896.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
July - - - - -	26 11	31 1	24 4
August - - - - -	25 4	30 10	22 11
September - - - - -	24 10	31 0	23 9
October - - - - -	—	31 1	27 10
BARLEY.			
1896.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
July - - - - -	19 11	20 1	18 3
August - - - - -	19 10	19 10	20 9
September - - - - -	19 9	20 1	24 0
October - - - - -	—	20 4	23 10
OATS.			
1896.	Per Qr.	Per Qr.	Per Qr.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
July - - - - -	17 7	17 7	15 0
August - - - - -	16 11	17 6	14 4
September - - - - -	16 5	17 7	14 1
October - - - - -	—	17 5	15 9

*Note.*—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

## II.—CORN PRICES :—LONDON, PARIS, BERLIN.

AVERAGE of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER  
at the under-mentioned Markets in the four under-  
mentioned months of 1896.

Month.	London.	Paris.	Berlin.
WHEAT.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - -	26 11	31 5	30 11
August - - -	24 3	31 5	31 6
September - -	24 8	31 10	33 4
October - - -	27 9	31 9	35 8
BARLEY.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d. s. d.
July - - - -	20 3	18 11	19 4 to 22 9
August - - -	20 6	19 3	19 1 „ 22 8
September - -	23 10	23 3	19 10 „ 23 5
October - - -	32 6	22 8	20 9 „ 23 10
OATS.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
July - - - -	16 3	17 6	17 4
August - - -	15 7	18 0	17 10
September - -	15 10	17 10	18 0
October - - -	17 9	17 6	18 7

*Note.*—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.



## III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE,  
in the months of September and October 1896, and in the  
Third Quarter of 1896.

(Compiled from the *Grocer*.)

DESCRIPTION.	3rd Quarter of 1896.				Month of September 1896.				Month of October 1896.			
	Per Cwt.				Per Cwt.				Per Cwt.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
BUTTER :												
Cork, 1sts -	86	1	to	—	89	9	to	—	101	7	to	—
„ 2nds	81	10	„	—	85	3	„	—	92	0	„	—
„ 3rds	76	7	„	—	79	9	„	—	86	0	„	—
„ 4th	68	7	„	—	68	0	„	—	70	0	„	—
Friesland	90	7	„	93 11	92	6	„	96 0	101	7	„	105 7
Dutch Factories	94	8	„	99 6	96	6	„	102 0	106	0	„	110 0
French Baskets	98	11	„	105 7	99	6	„	108 0	104	5	„	112 5
„ Crocks and Firkins.	88	0	„	96 0	88	0	„	97 0	94	0	„	102 5
„ 2nds and 3rds	78	3	„	85 0	81	6	„	86 0	85	7	„	92 0
Danish and Swedish	105	0	„	109 10	109	6	„	114 6	119	2	„	124 0
Finnish	93	11	„	99 3	97	0	„	103 0	101	2	„	113 7
Russian	79	8	„	89 5	80	0	„	92 0	88	5	„	100 1
American	51	0	„	91 11	53	6	„	97 6	55	2	„	104 10
Fresh Rolls (Foreign) per doz.	10	4	„	14 1	10	7	„	14 1	11	0	„	15 2
MARGARINE :												
Margarine	22	6	„	51 7	24	0	„	50 0	25	7	„	53 2
Mixtures	55	2	„	75 9	56	0	„	74 0	52	5	„	73 2
CHEESE :												
Cheddar	44	10	„	69 4	51	0	„	70 6	58	10	„	76 10
Somerset	42	7	„	60 6	47	0	„	61 6	56	5	„	64 10
Cheshire	44	9	„	73 9	53	3	„	76 0	60	5	„	76 0
Wiltshire	51	11	„	59 11	53	0	„	61 0	58	5	„	63 7
Double Gloucester	46	2	„	56 2	48	6	„	58 6	55	2	„	63 7
Derby	35	0	„	46 11	41	0	„	50 0	—	„	„	—

## PRICES OF VEGETABLES AND FRUIT.

## I.—MONTHLY PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	SEPTEMBER.		OCTOBER.	
	s.	d.	s.	d.
COVENT GARDEN :				
Beans, scarlet runners, per sieve -	1	0 to 3	—	—
Cauliflowers, per 5 dozen -	4	0 „ 5	2	6 to 7
Cucumbers, home grown, per dozen -	1	0 „ 3	2	0 „ 3
„ Ridge, per pad (about 10 dozen).	5	0 —	—	—
„ Dutch, per dozen -	1	0 —	—	—
Marrows, vegetable, per 5 dozen tally -	2	0 „ 3	—	—
Mushrooms, indoor, per lb. -	0	6 „ 1	1	0 „ 1
„ outdoor, per half sieve -	2	0 „ 5	—	—
Potatoes :—				
Dunbar Main Crop, per ton -	—	—	95	0 „ 105
„ Bruce, per ton -	—	—	80	0 „ 90
Lincoln Main Crop, per ton -	—	—	75	0 „ 85
Blacklands, per ton -	—	—	50	0 —
LIVERPOOL :				
Cabbages, per dozen -	0	6 „ 1	0	6 „ 1
Carrots, per cwt. -	3	0 „ 4	2	6 „ 3
„ per dozen bunches -	0	6 „ 0	0	6 „ 0
Cauliflowers, per dozen -	0	6 „ 2	0	6 „ 2
Celery, per dozen -	1	0 „ 2	0	8 „ 2
Cucumbers, per dozen -	1	0 „ 2	—	—
„ each -	0	3 „ 0	0	3 „ 0
Lettuces, per dozen -	0	6 „ 1	—	—
Mushrooms, per lb. -	0	4 „ 0	0	4 „ 1
Onions, English, per cwt. -	5	0 „ 7	5	0 „ 6
„ foreign, „ -	2	9 „ 3	2	6 „ 3
Parsley, per dozen bunches -	0	4 „ 0	0	4 „ 0
Potatoes :—				
Bruces, per cwt. -	1	4 „ 2	2	0 „ 2
Early Regents, per peck -	0	6 „ 0	—	—
Giants, per cwt. -	1	8 „ 2	1	9 „ 2
Main crop, per cwt. -	1	10 „ 3	2	3 „ 3
P. E. Kemps, per cwt. -	1	6 „ 2	—	—
Sutton's Abundance, per cwt. -	1	6 „ 2	1	9 „ 2
Swedes, per cwt. -	1	0 „ 1	1	3 „ 1
Turnips, per dozen bunches -	0	6 „ 0	0	6 „ 0

PRICES OF VEGETABLES AND FRUIT—*continued.*

I.—MONTHLY PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—*continued.*

(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	SEPTEMBER.		OCTOBER.	
GLASGOW:	s.	d.	s.	d.
Beans, broad, per stone - -	1	0 to 1 3	1	0 to 1 3
„ French, „ - -	2	0 „ 2 6	2	0 „ 2 6
Beetroot, per dozen - -	0	7 —	0	7 —
„ new, per dozen bunches -	3	6 „ 4 0	3	0 „ 4 0
Cabbages, per dozen - -	0	8 „ 0 9	0	8 „ 0 9
„ red, per dozen - -	2	3 „ 3 0	2	6 „ 3 0
Carrots, per cwt. - -	4	6 „ 5 0	3	0 „ 4 0
„ new, per dozen - -	1	0 „ 1 6	—	—
Cauliflowers, English, per dozen -	1	0 „ 2 6	2	0 „ 2 6
„ Edinburgh, „ - -	1	0 „ 1 3	2	0 „ 2 6
Celery, per bundle - -	2	0 „ 2 6	2	0 „ 2 6
Cress, per basket - -	0	3 —	0	3 —
Cucumbers, per dozen - -	4	0 „ 4 6	4	0 „ 4 6
Herbs, assorted, per bunch - -	0	1 „ 0 2	0	1 „ 0 2
Horseradish „ - -	2	9 „ 3 0	2	0 „ 2 3
Leeks, per dozen bunches - -	2	0 „ 3 0	1	0 „ 2 6
Lettuces, Cos, per dozen - -	0	9 —	0	9 —
Mushrooms, per lb. - -	1	0 „ 1 3	1	0 „ 1 3
Onions, Globe, per cwt. - -	3	0 „ 3 6	3	0 „ 3 6
Parsnips, per cwt. - -	5	6 „ 6 0	4	0 „ 4 6
Radishes, per dozen bundles - -	0	9 „ 1 0	0	9 „ 1 0
Rhubarb, natural, per cwt. - -	2	0 „ 3 0	2	0 —
Savoys, per dozen - -	—	—	0	10 „ 1 3
Sprouts, Brussels, per stone - -	2	6 —	1	6 „ 2 0
Swedes, per cwt. - -	—	—	1	0 „ 1 3
Turnips, per dozen bunches - -	2	0 „ 2 6	2	6 —



PRICES OF VEGETABLES AND FRUIT—*continued.*

## II.—MONTHLY PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	SEPTEMBER.		OCTOBER.	
COVENT GARDEN :	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
Apples, cooking, per sieve - -	2	6 to 4	2	0 to 3
„ dessert, per half sieve - -	2	6 „ 4	2	6 „ 4
Damsons, per half sieve - -	2	0 „ 4	—	—
Figs, per dozen - -	0	6 „ 1	0	6 „ 0
Grapes, Alicante, 1st quality, per lb. -	1	0 „ 1	1	0 „ 1
„ „ 2nd „ per lb. -	0	9 „ 1	0	6 „ 0
„ Gros Colmar, per lb. -	1	0 „ 1	1	0 „ 1
„ Gros Maroc, per lb. -	1	0 „ 1	1	0 „ 1
„ Hamburg, 1st quality, per lb. -	1	0 „ 1	1	0 „ 1
„ „ 2nd „ per lb. -	0	6 „ 0	0	6 „ 0
„ Muscats, English, 1st quality, per lb. -	1	9 „ 2	2	0 „ 2
„ „ English, 2nd quality, per lb. -	1	0 „ 1	0	10 „ 1
„ „ Channel Islands, per lb. -	1	0 „ 1	0	9 „ 1
Medlars, per half sieve - -	—	—	2	6 „ 3
Melons, each - -	0	6 „ 1	1	6 „ 2
Nuts, cob, per lb. - -	0	3 „ 0	0	3 „ —
Peaches, 1st size, per dozen - -	3	0 „ 12	9	0 „ 12
„ 2nd „ „ - -	1	6 „ 5	4	0 „ 5
„ 3rd „ „ - -	0	9 „ 2	—	—
Pears, Pitmaston, per half sieve -	3	0 „ 4	3	0 „ 4
„ Williams, „ „ -	2	6 „ 3	—	—
Pine-apples, St. Michael, each -	5	0 „ 6	5	0 „ 6
Plums, per half sieve - -	2	0 „ 3	—	—
Tomatoes, home-grown, smooth, per dozen lbs. -	2	6 „ 3	3	6 „ 4
„ ordinary kinds, per dozen lbs. -	1	6 „ 2	2	0 „ 2
LIVERPOOL :				
Damsons, per lb. - -	0	1½ —	0	1½ —
Grapes, English, per lb. - -	1	0 „ 3	1	0 „ 4
„ foreign „ - -	0	4 „ 0	0	4 „ 0
Pineapples, English, each - -	4	0 „ 6	4	0 „ 8
GLASGOW :				
Grapes, home, per lb. - -	2	0 —	2	0 —
Greengages, „ - -	0	5 „ 0	—	—
Pears, per case - -	2	3 „ 2	2	0 „ 3
Plums, per lb. - -	0	3 „ 0	0	3½ „ 0
Tomatoes, Guernsey, per lb. -	0	3 „ 0	0	4 „ 0
„ Scotch „ - -	0	7 „ 1	0	7 „ 0

## PRICES OF WOOL.

PRICES OF ENGLISH WOOL, per Pack of 240 lbs., in the months of September and October 1896.

(Compiled from the *Economist*.)

DESCRIPTION.	SEPTEMBER.	OCTOBER.
	£ s.    £ s.	£ s.    £ s.
South Downs - - -	9 0 to 11 0	9 0 to 11 0
Half-breds - - -	9 0 „ 10 5	9 0 „ 10 0
Leicester - - -	9 0 „ 10 0	9 0 „ 10 0
Kent fleeces - - -	9 0 „ 10 0	9 0 „ 10 0

## DISEASES OF ANIMALS.

## I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia** and of **Swine-Fever**, with the Number of CATTLE and SWINE Slaughtered by order of the Board of Agriculture, in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	Outbreaks Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to infection.	Outbreaks Confirmed.	SWINE Slaughtered as Diseased, or as having been exposed to infection.
June 1895 -	No. —	No. —	No. —	No. 1,634	No. 15,096
September 1895 -	—	—	—	1,578	18,293
December 1895 -	—	—	—	1,787	26,958
March 1896 -	1	8	78	1,524	19,596
June 1896 -	1	1	105	1,723	24,855
September 1896 -	—	—	—	1,104	19,329

NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
June 1895 -	110	266	251	360	212	16
September 1895	86	178	284	449	125	19
December 1895	115	201	197	359	134	9
March 1896 -	156	266	193	321	200	10
June 1896 -	106	214	177	303	127	11
September 1896	108	205	234	339	66	—

## II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia** and of **Swine-Fever**, with the Number of CATTLE and SWINE slaughtered by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUT- BREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	OUT- BREAKS Con- firmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
	No.	No.	No.	No.	No.
June 1895 -	—	—	—	856	1,491
September 1895 -	—	—	—	788	1,240
December 1895 -	—	—	—	165	625
March 1896 -	—	—	—	267	1,508
June 1896 -	—	—	—	241	1,614
September 1896 -	—	—	—	162	850



NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Ireland in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					Dogs.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
June 1895 -	2	2	—	—	184	51
September 1895	1	1	—	—	162	58
December 1895	—	—	—	—	101	37
March 1896 -	—	—	4	6	156	33
June 1896 -	1	1	—	—	150	86
September 1896	—	—	3	4	114	50

## POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY.

### ADVANTAGES OFFERED FOR LIFE INSURANCE.

#### REDUCED ANNUAL PREMIUMS.

#### EXTENSION OF OLD AGE INSURANCES.

NEW LIFE INSURANCE TABLES came into force on the 1st February 1896.

Under these Tables, which are given at pages 351 and 352 :—

First—THE ANNUAL PREMIUMS are REDUCED.

Second—OLD AGE INSURANCES can now be secured for any sum of money from 5*l.* to 100*l.* on attaining the age of 55, 60, or 65 years. In case of death, the insurance money will be paid to the representatives.

LIFE INSURANCES from 5*l.* to 100*l.* can be granted to persons between 14 and 65 years of age. Children between 8 and 14 years of age can be insured for 5*l.*

GOVERNMENT SECURITY. Persons insured have direct Government security.

PROPOSAL FORMS can be obtained at any Post Office Savings Bank, where the charges can also be ascertained.

**EVIDENCE OF AGE.** A Statement of Age is sufficient if the Controller of the Savings Bank Department can verify it from the records of the Registrar-General, London, and thus the cost of a Certificate of Birth is saved. A simple form for the purpose can be obtained at any Post Office Savings Bank.

**MEDICAL CERTIFICATES** can be dispensed with for Insurances up to 25*l.* inclusive.

**PREMIUMS** are payable by transfers from Savings Bank deposit accounts, and deposits can be made for the purpose at any Post Office Savings Bank. When the balance in the account is insufficient, the depositor will be informed accordingly in time to make a deposit. By means of the Penny Stamp Slips the provision can be made in sums of one penny at a time.

**FRIENDLY SOCIETIES.** Members can pay their premiums through their Society if the Society is willing to undertake the collection.

**RESIDENCE ABROAD.** Permission is granted to persons over 30 years of age who have been insured 5 years, to reside in any part of the World without the payment of any extra premium.

**LAPSED INSURANCES—MONEY NOT LOST.** If after paying two annual premiums the Insurance is discontinued, a Surrender Value is payable, or a "paid up" Policy is issued for such an amount of Insurance as the premiums already paid may justify.

**NOMINATIONS.** Any insured person over 16 years of age can, without any expense, nominate a person to receive the amount of the Insurance money at death.

**PAYMENT AT DEATH.** The amount insured is paid immediately evidence of death is furnished. A form for obtaining a cheap certificate of death, at the reduced charge of one shilling, can be obtained from the Controller of the Savings Bank Department.

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## NEW LIFE INSURANCE TABLES—REDUCED PREMIUMS.

*Extension of Old Age Insurances.*

AGE next Birthday.	Premiums to assure £5, payable:—				
	At Death.		At Age of 55 or Death.	At Age of 60 or Death.	At Age of 65 or Death.
	Annual Premium for Life.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 55 Years.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 65 Years.
	Table 1.	Table 2.	Table 3.	Table 4.	Table 5.
	s. d.	s. d.	s. d.	s. d.	s. d.
9 -	1 6	1 7	1 11	1 9	1 8
10 -	1 7	1 8	2 0	1 10	1 9
11 -	1 7	1 8	2 0	1 10	1 9
12 -	1 7	1 8	2 1	1 11	1 9
13 -	1 8	1 9	2 2	1 11	1 10
14 -	1 8	1 10	2 2	2 0	1 11
15 -	1 9	1 10	2 3	2 1	1 11
16 -	1 9	1 11	2 4	2 2	2 0
17 -	1 10	1 11	2 5	2 2	2 0
18 -	1 10	2 0	2 6	2 3	2 1
19 -	1 11	2 1	2 7	2 4	2 2
20 -	1 11	2 1	2 8	2 5	2 2
21 -	2 0	2 2	2 9	2 5	2 3
22 -	2 0	2 2	2 10	2 6	2 4
23 -	2 1	2 3	2 11	2 7	2 4
24 -	2 1	2 4	3 0	2 8	2 5
25 -	2 2	2 5	3 1	2 9	2 6
26 -	2 2	2 5	3 2	2 10	2 7
27 -	2 3	2 6	3 4	2 11	2 7
28 -	2 3	2 7	3 5	3 0	2 8
29 -	2 4	2 8	3 7	3 1	2 9
30 -	2 5	2 9	3 9	3 2	2 10
31 -	2 6	2 10	3 11	3 4	2 11
32 -	2 6	2 11	4 1	3 5	3 0
33 -	2 7	3 0	4 3	3 7	3 2
34 -	2 8	3 2	4 5	3 8	3 3
35 -	2 9	3 3	4 8	3 10	3 4
36 -	2 10	3 5	4 11	4 0	3 6
37 -	2 11	3 6	5 2	4 2	3 7
38 -	3 0	3 8	5 6	4 5	3 9
39 -	3 1	3 10	5 10	4 7	3 11
40 -	3 2	4 0	6 2	4 10	4 1
41 -	3 3	4 2	6 7	5 1	4 3
42 -	3 4	4 5	7 1	5 4	4 5
43 -	3 5	4 8	7 8	5 8	4 7
44 -	3 7	4 11	8 4	6 0	4 10
45 -	3 8	5 2	9 1	6 5	5 1
46 -	3 10	5 6	—	6 10	5 4
47 -	3 11	5 11	—	7 4	5 7
48 -	4 1	6 4	—	7 11	5 11
49 -	4 3	6 10	—	8 7	6 4
50 -	4 4	7 5	—	9 4	6 8

These Tables are applicable to Assurances for amounts of not less than £5 and under £25. Premiums for Assurances over £5 are proportionally higher. For instance, the Premium for an Assurance of £10 would be twice the amount given above.

FOR £100 TABLES SEE NEXT PAGE.



NEW LIFE INSURANCE TABLES—*continued.*

AGE next Birthday.	Premiums to assure £100, payable:—				
	At Death.		At Age of 55 or Death.	At Age of 60 or Death.	At Age of 65 or Death.
	Annual Premium for Life.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 55 Years.	Annual Premium until the Age of 60 Years.	Annual Premium until the Age of 65 Years.
	Table 11.	Table 12.	Table 13.	Table 14.	Table 15.
15 -	£ s. d. 1 8 6	£ s. d. 1 11 0	£ s. d. 2 0 0	£ s. d. 1 15 6	£ s. d. 1 13 0
16 -	1 9 6	1 12 0	2 1 6	1 17 0	1 14 0
17 -	1 10 6	1 13 0	2 3 0	1 18 6	1 15 0
18 -	1 11 6	1 14 6	2 4 6	1 19 6	1 16 0
19 -	1 12 0	1 15 6	2 6 0	2 1 0	1 17 6
20 -	1 13 0	1 16 6	2 8 0	2 2 6	1 18 6
21 -	1 14 0	1 17 6	2 9 6	2 3 6	1 19 6
22 -	1 14 6	1 18 6	2 11 6	2 5 0	2 0 6
23 -	1 15 6	1 19 6	2 13 0	2 6 6	2 2 0
24 -	1 16 6	2 1 0	2 15 0	2 8 0	2 3 0
25 -	1 17 6	2 2 6	2 17 6	2 9 6	2 4 6
26 -	1 18 6	2 3 6	2 19 6	2 11 6	2 6 0
27 -	1 19 6	2 5 0	3 2 0	2 13 6	2 7 6
28 -	2 0 6	2 7 0	3 5 0	2 15 6	2 9 0
29 -	2 1 6	2 8 6	3 7 6	2 17 6	2 10 6
30 -	2 3 0	2 10 0	3 11 0	2 19 6	2 12 6
31 -	2 4 0	2 12 0	3 14 0	3 2 0	2 14 0
32 -	2 5 6	2 14 0	3 17 6	3 4 6	2 16 0
33 -	2 6 6	2 16 0	4 1 6	3 7 6	2 18 6
34 -	2 8 0	2 18 6	4 6 0	3 10 0	3 0 6
35 -	2 9 6	3 1 0	4 10 6	3 13 6	3 3 0
36 -	2 11 0	3 3 6	4 15 6	3 17 0	3 5 6
37 -	2 13 0	3 6 6	5 1 6	4 0 6	3 8 0
38 -	2 14 6	3 9 6	5 7 6	4 4 6	3 11 0
39 -	2 16 6	3 13 0	5 14 6	4 9 0	3 14 0
40 -	2 18 0	3 16 6	6 2 6	4 13 6	3 17 6
41 -	3 0 0	4 0 6	6 11 6	4 19 0	4 1 0
42 -	3 2 6	4 5 0	7 1 6	5 4 6	4 5 0
43 -	3 4 6	4 10 0	7 13 6	5 11 0	4 9 0
44 -	3 7 0	4 15 6	8 7 6	5 18 6	4 13 6
45 -	3 9 6	5 1 6	9 3 6	6 6 6	4 19 0
46 -	3 12 0	5 8 6	—	6 16 0	5 4 6
47 -	3 15 0	5 16 0	—	7 6 0	5 10 6
48 -	3 17 6	6 5 0	—	7 18 0	5 17 0
49 -	4 1 0	6 15 6	—	8 12 0	6 4 6
50 -	4 4 0	7 7 6	—	9 8 6	6 13 0

These Tables are applicable to Assurances of £25 to £100, the Premiums for Assurances of less than £100 being proportionately lower. For instance, the Premium for an Assurance of £50 would be half the amount given above.

FOR £5 TABLES SEE PRECEDING PAGE.

## ADDITIONAL INFORMATION.

Further information can be obtained of the local Postmaster or on application to the Controller, Savings Bank Department, General Post Office, London, free of Postage.

## OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

*Purchase Money Returnable Scale.*

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
22 " 23	1 12 5	15 15 9	1 15 10	17 9 0	0 13 0	10 15 1	0 14 6	11 19 3
23 " 24	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
24 " 25	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
25 " 26	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
26 " 27	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
27 " 28	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
28 " 29	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
29 " 30	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
30 " 31	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
31 " 32	1 8 8	13 19 6	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
32 " 33	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
33 " 34	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
34 " 35	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
35 " 36	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 0	0 11 2	9 4 6
36 " 37	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
37 " 38	1 6 0	12 13 3	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
38 " 39	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
39 " 40	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
40 " 41	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
41 " 42	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
42 " 43	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
43 " 44	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
44 " 45	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
45 " 46	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
46 " 47	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

*Purchase Money Not Returnable Scale.*

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22 " 23	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23 " 24	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24 " 25	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25 " 26	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26 " 27	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27 " 28	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28 " 29	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29 " 30	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30 " 31	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31 " 32	1 5 10	11 17 8	1 9 6	13 16 11	0 8 9	6 7 5	0 10 5	7 17 11
32 " 33	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 6	0 10 1	7 13 5
33 " 34	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 6	0 9 10	7 8 10
34 " 35	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 6	0 9 6	7 4 2
35 " 36	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 5	0 9 3	6 19 5
36 " 37	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37 " 38	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38 " 39	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 11
39 " 40	1 2 0	9 19 2	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40 " 41	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41 " 42	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42 " 43	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43 " 44	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44 " 45	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45 " 46	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

# **LIST OF LEAFLETS ISSUED BY THE BOARD OF AGRICULTURE.**

Number.	Title.
Leaflet No. 1	Mites on Currant and Nut Trees.
" " 2	Vine and Raspberry Weevils.
" " 3	The Turnip Fly or Flea.
" " 4	Caterpillars on Fruit Trees.
" " 5	The Mangel Wurzel Fly.
" " 6	The Field Vole.
" " 7	Autumn Catch Crops and Fodder Supply.
" " 8	Farmers and Assessments to Local Rates.
" " 9	Ensilage.
" " 10	Wireworms.
" " 11	The Daddy Longlegs or Crane Fly.
" " 12	The Gooseberry Saw-Fly.
" " 13	Acorn Poisoning.
" " 14	The Raspberry Moth.
" " 15	The Apple Blossom Weevil.
" " 16	The Apple Sucker.
" " 17	Preservation of Commons.
" " 18	Fertilisers and Feeding Stuffs Act, 1893.
" " 19	Pea and Bean Weevil.
" " 20	The Magpie Moth.
" " 21	The Warble Fly.
" " 22	The Diamond Back Moth.
" " 23	Potato Disease.
" " 24	The Ribbon Footed Corn-Fly.
" " 25	The Cockchafer.
" " 26	Farmers and the Income Tax.
" " 27	Remission of Tithe Rentcharge.
" " 28	Anthrax.
" " 29	Swine Fever.
" " 30	The Codlin Moth.
" " 31	The Onion Fly.
" " 32	Foul Brood or Bee Pest.
" " 33	Surface Caterpillars.
" " 34	Woolly Aphis or American Blight.

*Presd.*  
21 DEC. 96



*Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.*





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in  
Great Britain.*



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and  
Calving Disorders  
Gratis  
and Post Free.*

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instructions sent.

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# The Journal



OF THE

## Board of Agriculture.

March 1897.

	Page
GRAIN AND POTATO CROPS OF 1896 - - - - -	355
HAY CROP OF 1896 - - - - -	359
HOP CROP OF 1896 - - - - -	362
FRUIT CROP OF 1896 - - - - -	365
IMPORT TRADE IN EGGS - - - - -	369
FERTILISERS AND FEEDING STUFFS ACT - - - - -	376
FARMERS AND ASSESSMENTS TO LOCAL RATES - - - - -	379
REPORTS ON FOREIGN CROPS - - - - -	384
INJURIOUS INSECTS AND FUNGI - - - - -	390
GENERAL AGRICULTURAL NOTES - - - - -	393
FOREIGN OFFICE REPORTS - - - - -	409
PARLIAMENTARY PUBLICATIONS - - - - -	419
IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE - - - - -	428
PRICES OF LIVE STOCK - - - - -	440
STATISTICAL TABLES - - - - -	447

(For detailed Table of Contents see page v of Advertisements.)



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# The Journal

OF THE

## Board of Agriculture.

Vol. III.]

March 1897.

[No. 4.

### THE GRAIN AND POTATO CROPS OF 1896.

A statement showing the total estimated yield of the wheat, barley, and oat crops of Great Britain in 1896 was issued by the Board of Agriculture on 4th December last. These figures may, for convenient reference, be reproduced with some further analysis of the experience of different parts of the country during the harvest of the past year, while the estimates of the yield of the potato crop of 1896 may now be added.

The recovery of rather more than half of the wheat area lost in 1895, to which attention was drawn by the Board in the Preliminary Returns of acreage issued in August last, combined with the largely enhanced yield of 1896 over the greater part of the country, has furnished a wheat crop estimated to be but little inferior in bulk to that grown in 1894, when the acreage was 234,000 acres greater, and the production 20,000,000 bushels more than in the year 1895. The crops of the last two years contrast as under:—

WHEAT.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1886-95.
	1896.	1895.	1896.	1895.	
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
England - - - -	54,523,000	35,120,000	33·88	26·21	28·82
Wales - - - -	1,078,000	932,000	22·95	21·61	23·24
Scotland - - - -	1,452,000	1,104,000	38·47	32·83	35·17
GREAT BRITAIN -	57,053,000	37,176,000	33·68	26·23	28·81

These figures represent, on the 1,609,000 acres under wheat in England, a crop better on the average by nearly a quarter per acre than was reported in the previous harvest. The smaller excess reported from Scotland and low estimates from Wales concern areas where the wheat acreage is relatively insignificant, and have not materially reduced the total results for Great Britain, which make the wheat harvest for 1896

show a greater yield per acre than has occurred in the 13 years since official produce statistics were first collected, and nearly 5 bushels per acre over the calculated average of the 10 years 1886-95.

The barley crop of 1896 was grown on an acreage slightly below the increased figure shown in 1895, and the estimated aggregate production exceeded that of 1895 by somewhat over 2,000,000 bushels, or just about the same amount below the total production of 1894, when the acreage was not very dissimilar to that of last year. The yield of 1896 is placed at 2 bushels above the rate per acre estimated in 1895, but only a single bushel above the mean yield per acre of the period 1886-95. The figures for each part of Great Britain are as follows:—

BARLEY.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1886-95.
	1896.	1895.	1896.	1895.	
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
England - - -	59,844,000	58,092,000	33·64	31·61	32·67
Wales - - -	2,823,000	2,997,000	26·21	26·78	28·92
Scotland - - -	8,108,000	7,562,000	37·14	34·92	35·28
GREAT BRITAIN -	70,775,000	68,651,000	33·63	31·69	32·68

Oats in Great Britain proved an under-average crop. In both England and Wales, as the following table shows, the yield per acre was put below the estimate for 1895 and still more below the 10 years' mean of the period 1886-95. In Scotland the yield per acre was rather over both the 1895 figure and that for the 10 years. The acreage there also was practically the same as in the preceding year, while in England the larger area put under wheat left that under oats short by some 200,000 acres. The result has been to show a total production of this cereal considerably below that of 1895, something like 16 per cent. short of the supply of 1894, and but little over the low estimate of the year 1893.

OATS.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1886-95.
	1896.	1895.	1896.	1895.	
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
England - - -	69,402,000	78,645,000	37·60	38·45	40·36
Wales - - -	7,180,000	7,654,000	29·71	31·60	32·49
Scotland - - -	37,434,000	35,850,000	37·13	35·55	35·97
GREAT BRITAIN -	114,016,000	122,149,000	36·83	37·06	38·23



Apart from the injury by wet weather which affected the quality more than the bulk in later districts, the cereal crops of 1896 differed somewhat considerably in yield in certain parts of England.

The comparative results of the year may be most readily shown by presenting the estimates of produce and yield in the county groups arranged geographically in the distinctive divisions of England, which it has been the practice to make use of for the produce statistics.

ENGLAND.	WHEAT.		BARLEY.		OATS.	
	Estimated Total Produce.	Esti- mated Yield per Acre.	Estimated Total Produce.	Esti- mated Yield per Acre.	Estimated Total Produce.	Esti- mated Yield per Acre.
DIVISION I.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
(a.) Beds, Hunts, Cambs, Suffolk, Essex, Herts, Middlesex, London.	13,818,473	33·73	13,129,639	33·63	8,409,256	41·58
(b.) Norfolk, Lincoln, York, E.R.	12,795,557	38·34	19,235,653	37·58	12,412,143	44·62
Total - -	26,614,030	35·80	32,365,292	35·87	20,821,405	43·34
DIVISION II.						
(a.) Kent, Surrey, Sus- sex, Berks, Hants.	7,062,354	33·54	4,639,874	33·12	10,160,786	42·37
(b.) Notts, Leicester, Rutland, North- ants, Bucks, Ox- ford, Warwick.	6,681,309	32·98	6,540,078	31·85	5,749,000	33·87
Total - -	13,743,663	33·27	11,179,952	32·36	15,909,786	38·85
DIVISION III.						
(a.) Salop, Worcester, Gloucester, Wilts, Monmouth, Here- ford.	6,309,513	32·84	4,694,950	28·10	5,422,165	32·61
(b.) Somerset, Dorset, Devon, Cornwall.	3,484,558	27·97	3,337,761	24·62	6,574,305	27·26
Total - -	9,794,071	30·92	8,032,711	26·34	11,996,470	29·44
DIVISION IV.						
(a.) Northumberland, Durham, York, N.R., York, W.R.	2,486,473	32·12	7,001,907	37·05	9,661,228	39·37
(b.) Cumberland, West- morland, Lancs, Cheshire, Derby, Stafford.	1,885,032	32·18	1,263,685	32·06	11,013,261	36·35
Total - -	4,371,505	32·15	8,265,592	36·19	20,674,489	37·70
TOTAL FOR ENGLAND	54,523,269	33·88	59,843,547	33·64	69,402,150	37·60

From the foregoing table it will be seen that the effect of the early drought was especially notable in the four south-western counties of Somerset, Dorset, Devon, and Cornwall, wherein a wheat crop of less than 28 bushels, a barley crop of little more

than  $24\frac{1}{2}$  bushels, and an oat crop of hardly over 27 bushels per acre appear to have been reaped.

In advance of the complete volume of agricultural returns for 1896, it may be useful here to add to the notes on the cereal harvest a summary of the potato crop, respecting which at one period some anxiety was entertained in certain districts. Although the rains of the later autumn may have impeded the securing of this crop, the aggregate production for Great Britain is estimated to have little, if at all, fallen short of the result of 1895, when the largest potato crop since 1889 was estimated to have been produced. The English total was, indeed, over the aggregate for 1895, while the Welsh and Scotch crops were short, but the yield per acre was in every case distinctly above the average, although not so largely as in the preceding year.

POTATOES.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre, 1886-95.
	1896.	1895.	1896.	1895.	
	Tons.	Tons.	Tons.	Tons.	Tons.
England - - -	2,539,000	2,519,000	6'35	6'75	6'00
Wales - - -	218,000	227,000	6'45	6'74	5'71
Scotland - - -	805,000	847,000	6'20	6'30	5'70
GREAT BRITAIN -	3,562,000	3,593,000	6'32	6'64	5'91

## THE HAY CROP OF 1896.

## AND THE RECENT IMPORTS OF HAY.

The drought in the early part of 1896 led to some apprehension that the experience of hay-growers in Great Britain, or at all events in southern England, in 1893, might be again repeated. Sufficient is now known of the past year's estimates to show that, while a large decrease of aggregate production occurred in England and Wales, both in clover-hay and in that from permanent grass, the loss, whatever may be the case in special localities, has been generally by no means so heavy as in the earlier year.

Contrasting the total hay crop of both descriptions in 1896 with the immediately preceding year, 1895, there is shown a smaller supply by very nearly one million tons, for the collective acreage of both descriptions of hay was smaller by about a quarter of a million acres than in 1895, and the yield, except in Scotland, was short by several hundredweights per acre.

Taking first separately the hay cut from clover and rotation grasses last year, the estimators' returns compared with the results of 1895 account for half of the aggregate loss:—

HAY cut from Clover and Rotation Grasses.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre 1896-95.
	1896.	1895.	1896.	1895.	
	Tons.	Tons.	Cwts.	Cwts.	Cwts.
England - - -	1,806,000	2,429,000	22·55	27·89	28·11
Wales - - -	161,000	186,000	18·17	21·13	22·91
Scotland - - -	657,000	502,000	33·44	26·00	30·22
GREAT BRITAIN -	2,624,000	3,117,000	24·16	27·06	28·10

The 1895 figures were themselves slightly below those of 1894, but both those years, so far as the English crop of clover-hay was concerned, showed nearly double the poor yield of 1893, the past year's total coming about midway between these extremes, and leaving the crop of 1896 for Great Britain, as a whole, under, but not by any very large proportion, the 2,700,000 tons of clover-hay estimated to have been secured in 1892. The yield per acre in 1896 is given as 4 cwts. short of a 10 years' average, while that of 1893 was nearly 10 cwts. short of this figure.

Turning to the crop cut from permanent grass, on an acreage less by 120,000 acres than was mown in the former year, there is estimated to have been a total reduction of 500,000 tons



compared with 1895, and of 2,882,000 tons if the comparison be made with the exceptionally heavy crop of 1894, when an average yield of 28·6 cwts. per acre was reported, against 19·2 cwts. in 1895, and only 17·5 cwts. in 1896. The figures for the several divisions of Great Britain stand thus:—

HAY cut from Permanent Grass.	Estimated Total Produce.		Estimated Yield per Acre.		Average Yield per Acre 1886-95.
	1896.	1895.	1896.	1895.	
	Tons.	Tons.	Cwts.	Cwts.	Cwts.
England - - - -	3,487,000	3,950,000	17·53	19·37	23·84
Wales - - - -	325,000	412,000	12·99	16·27	18·02
Scotland - - - -	248,000	197,000	29·23	22·61	23·24
GREAT BRITAIN -	4,060,000	4,559,000	17·51	19·16	23·39

The reduction in the hay crop, therefore, under this head in 1896, although considerable, is still far from equalling the disaster of 1893, when only 2,681,000 tons were obtained from permanent grass in Great Britain, against 4,060,000 tons last year. Taken by itself, the English quota was estimated at 2,189,000 tons in 1893, against 3,487,000 tons in 1896.

Irrespective of the Irish hay crop, the aggregate of the last two tables, which will represent the entire estimated production of hay, whether from rotation or permanent grass in Great Britain stands at 6,684,000 tons, against 7,676,000 tons in the preceding year. These totals no doubt contrast unfavourably with the 10,390,000 tons of the heavy British crop of 1894, but are both in excess of the results of the disastrous season of 1893, when rather less than 4,600,000 tons, whether from clover or permanent grass, were estimated to have been mown.

In connection with these figures it may not be uninteresting to note that, whatever reduction the hay crop of 1896 may have shown, there has been no recurrence of the exceptional imports of transatlantic hay, which were attracted to the shores of the United Kingdom by the rapid augmentation of prices in 1893.

As pointed out two years ago in this Journal,\* the remarkable development of hay imports, which attracted attention in the year just named, arose after the results of the drought on both the British hay harvest and on the hay crops of our continental neighbours had become apparent. Four-fifths of the arrivals of sea-borne hay in the ports of the United Kingdom took place in the second half of the year, over 200,000 tons being received in the six months between 1st July and 31st December 1893, and the supply being continued at nearly this level for another half-year, so that, in the period of 12 months up to the middle of 1894, as much as 585,000 tons of foreign hay had made their

\* Journal of Board of Agriculture, Vol. I., p. 268.

appearance in British markets. From and after that date the supply fell off again as prices dropped, as will be seen from the following statement of the imports in periods of six months:—

Years.	First Six Months.	Second Six Months.	Total.
	Tons.	Tons.	Tons.
1892 - - - - -	26,046	35,191	61,237
1893 - - - - -	62,738	200,312	263,050
1894 - - - - -	184,735	69,479	254,214
1895 - - - - -	43,070	75,725	118,795
1896 - - - - -	49,049	58,864	107,913

The imports of the second half of 1894 fell rapidly away, and the trade with those distant countries which found it profitable to send hay to this country between June 1893 and July 1894, so far from developing into a continuous business, was speedily checked by the return of prices to the former level, and the import statistics of the past year give no indication that the reduced home crop of 1896 has revived importation from these quarters.

The source of the hay imports has indeed reverted even more completely than before 1893 from countries which then contributed so largely to our supplies to our more immediate continental neighbours. This may be shown by separating the receipts of each year into two categories of origin, as under, for each of the past five years:—

Years.	From Europe and Mediterranean Countries.	From America and other Countries.	From all Countries.
	Tons.	Tons.	Tons.
1892 - - - - -	35,222	26,015	61,237
1893 - - - - -	70,211	192,839	263,050
1894 - - - - -	68,156	186,058	254,214
1895 - - - - -	63,793	55,002	118,795
1896 - - - - -	96,350	11,563	107,913

The quantity of hay now received from across the Atlantic has been reduced to only about two-fifths of what it was in 1892. Of this the United States and Canada sent only 8,200 tons, against 24,700 tons in 1892: the nearest European countries have, however, considerably increased their supplies in this interval.

## THE HOP CROP OF 1896.

According to the statement issued by the Board of Agriculture in August last, the total acreage of Hop Land in England in 1896 was 54,217 acres, against 58,940 acres in 1895, showing a decrease of 4,723 acres. This, with the exception of 1890, when there were 54,555 acres, is the smallest acreage since 1861, when it was estimated that there were only 47,941 acres. The largest reduction in any hop-growing county of importance in proportion to its acreage was in Sussex, where the area fell from 7,489 acres to 5,908 acres, a decrease of 1,581 acres. The acreage in Kent was reduced by 1,718 acres, or from 35,018 acres to 33,300 acres. The three hop-growing divisions of Kent, viz., East Kent, Mid Kent, and the Weald of Kent are sharply defined by the hop trade. For the year 1896 it will be found that the reduction in these districts has been 765 acres in East Kent, 244 acres in Mid Kent, and 709 acres in the Weald of Kent. There are now only 10 counties in England in which hops are grown, and in two of these, Berkshire and Suffolk, the quantity is inappreciable and is diminishing. In 1896 there were only 4 acres in each county. In Gloucester there were 49 acres, and in Shropshire 140 acres. Twenty years ago hops were cultivated in 18 English counties, but in 7 of these there were only a few acres. Beginning with the earliest date for which reliable statistics are available, viz., 1808, the lowest hop acreage appears to have been 38,436 acres in 1808, and the highest 71,789 acres in 1878.

From the statistics of production published in October last, it appears that the average yield per statute acre of hop land in 1896 was 8.36 cwt., as against 9.39 cwt. in 1895, 10.70 cwt. in 1894, and 7.21 cwt. in 1893. These crops, with the exception of that of 1893, are considerably above the average. The improvement in the annual average yield per acre of the last six years is said by many to be due to the improved methods of checking the injuries caused by aphides, and to the practice of training the plant on strings of cocoa-nut fibre and upon wire-work.

The season of 1896 opened favourably. There was plenty of bine, which was tied up to the poles in good time, except in some districts in the Weald of Kent and Sussex, and it progressed favourably until attacked by countless swarms of aphides, which were finally cleared off by means of three or four, and in some cases five, syringings with soft soap and quassia solutions. In the first week of July the effects of the long drought were visible upon the heavier soils and in localities where manuring and cultivation had been neglected. The variety of hop known as Fuggles especially gave way and became "fire-blasted" in many



localities. Red spider was also very troublesome. Upon the Thanet beds in East Kent and the more loamy soils of Mid Kent the Goldings, as a rule, bore the drought well, and did not stand in much need of the rain, which came just in time to save from utter destruction a large acreage on the Weald Clay and Hastings Sand soils in Kent and Sussex, and considerably increased the crop generally in all districts.

Large crops of excellent quality were produced in most of the East-Kent hop gardens and in many in Mid-Kent. A larger yield was obtained in Kent than in 1895, viz., 9.60 cwt. compared with 9.04. On the other hand, the hop land in Worcester, Hereford, and Sussex, being for the most part of a heavy character, produced considerably less in 1896 than in 1895, in consequence of the drought.

The quality of many of the East-Kent samples was exceedingly fine and better than in some previous seasons. Many of the Mid-Kent Bramblings were also above an average quality, but the later Goldings suffered to some extent from an attack of "red mould," which spread very rapidly in the damp, chilly weather of September which followed the heat and drought of the summer.

This attack was reported upon in the last number of this Journal,\* and shown to be caused by the fungus known as *Podospheera castagnei*, which causes the ordinary mould upon the bine, burr, and cones of hops. It was supposed that "red mould" was due to a different fungus, but there was no doubt that the discoloration of the bracts of the hop-cones in September last was occasioned by *Podospheera castagnei*, as its perithecia were found in quantities within the cones, and the filaments of the fungus were upon and within their tissues.

In some of the hop gardens, where syringing for aphid blight was somewhat neglected, especially in Hants, parts of Sussex, and the Weald of Kent, aphides collected in the cones and made them black, spoiling the colour and quality of the samples, and materially decreasing their value. It is considered that about 35 per cent. of the crop was of very fine quality, and that 45 per cent. consisted of sound, thick, well-coloured hops of good brewing value, the remainder being composed of samples of inferior quality, more or less damaged by mould and aphides.

There was a good demand for the finer portion of the crop, notably for that grown in East-Kent, and this was quickly taken by the brewers at from 80s. to 110s. per cwt. The best of the Mid-Kent Goldings found a fairly quick sale at prices ranging between 70s. and 90s. per cwt. The best of the Worcester and Hereford hops were sold at from 65s. to 85s. per cwt. For all other hops there was a very dull sale, at from 30s. to 60s. per cwt., with even lower rates for brown and diseased samples.

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\* Vol. III, No. 3., p. 291.

The average price obtained for English hops of all kinds and qualities grown in 1896, up to February 1st, 1897, is estimated by good authorities at 64s. per cwt. In 1895 the average price was estimated at 63s. per cwt. for the whole season, compared with 55s. in 1894.

At the average return of 64s. per cwt. for the 1896 crop, the value of the average yield per acre as returned by the Board of Agriculture would only be 26*l.* 15s., involving a serious loss to hop planters generally."

According to the estimates issued annually by Messrs. Barth of Nuremberg, the hop crop of the world in 1896 amounted to 1,686,100 cwts., as compared with 2,050,853 cwts. in 1895, and 2,241,550 cwts. in the previous year. Each of these three crops was considerably larger than the average of the previous ten years, which appears to have been about 1,595,000 cwts. Messrs. Barth put the annual consumption of hops in the world at 1,605,800 cwts., and the annual average production of all the hop-producing countries in the world during the last 13 years is estimated by them at about 1,675,000 cwt.

In all foreign countries, as in England, the prices of hops have ruled very low. In Germany, Austria, and France, the range has been between 10s. and 90s. per cwt. The average price, it is considered, has not been higher than 40s., as such a large proportion of the growth was of indifferent quality and materially injured by the wet autumn. In Belgium the average price was considerably lower. In America the quality of the crop, especially in the eastern states, was unsatisfactory, and prices have been low, at from 18s. to 60s. per cwt. Very fine samples of New York State hops, which were comparatively few, made rather higher figures.

A feature of the hop crop of 1896 has been the unusually small proportion of fine coloured samples, and this, together with the over-average quantity produced during the last three years, has made the returns to growers generally of an unprofitable nature.

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## THE FRUIT CROP OF 1896.

The fruit crop of 1896 appears to have been, on the whole, not up to the average in quantity. The weather in the spring and early summer was very dry and not favourable for the fructification of the fruit blossoms, many of which, especially of cherries and pears, fell off before the formation of the fruit, and in some instances there was a considerable "drop" of cherries, pears, gooseberries, and currants after the fruit had formed.

The yield of the strawberry crop was considerably below the average. There was a great show of blossom, but some of it did not develop into fruit on account of drought. Fortunately good showers came just in time to save a considerable portion of the crop, which proved to be generally of good quality.

Gooseberries in some districts were not very abundant, but in others a good yield was obtained, particularly of the late varieties.

Red currants were hardly an average crop. The acreage of this fruit was somewhat reduced on account of unremunerative prices occasioned by the very heavy crops of the two former years, and the large importation of currants from abroad.

The yield of black currants was also below the average in quantity. Drought always affects this crop prejudicially, and the Currant Mite (*Phytoptus ribis*) has been very destructive during the past few years.

As usual, there was a magnificent display of blossom in the cherry orchards, particularly in the famous cherry-growing districts of East Kent, but an unusual per-centage was abortive owing to the drought. It was feared also that a large per-centage of the fruit would fall just at the "stoning" period, but, except on the very dry soils, this did not happen. Although the crop fell short of the average in point of quantity, the quality was excellent.

Raspberries were close upon an average yield. Rain came just in time to save the crop. The cultivation of this fruit is extending largely, as the canes come into bearing in the second year, and there is always a great demand for raspberries.

Plums throughout the country were by no means a large crop, and in some localities they were decidedly scarce. Their blossom was not abundant, and the dry weather did not suit it.

Damsons were below an average yield. In many places the trees were much injured by aphides and by the Damson Mite, *Bryobia pruni*.

Pears were also an under-average crop. The blossoms were affected by late frosts, and the Pear Midge (*Diplosis pyrivora*) did considerable harm to the tiny pears just after they were formed. A good deal of cracking also was noticed, caused by weather influences and by a fungus which spoilt the appearance of the fruit and caused it to fall.



The apple crop generally was not large. Much harm was done by the caterpillars of the Winter Moth (*Cheimatobia brumata*), and by the caterpillars of other moths. The Codlin Moth was, also, unusually troublesome. In some situations a good deal of "scald" was noticed, attributed to climatic influences, but it was evidently a fungoid attack, and in many cases the unmistakable spots of the fungus *Fusicladium dendriticum* were observed. There were also large brown patches upon some of the apples, which gradually extended. These fungi were more prevalent upon the early varieties, under some of the trees of which quantities of fallen apples were found. Lord Suffields and Keswick Codlins were especially attacked in certain districts. On the whole the quality of the apples of the main crop was fairly good. Some varieties, notably the Cox's Orange Pippin, were particularly fine, well coloured, and of good flavour.

Filberts and cob nuts were about a good average return.

Some fruit made satisfactory prices, especially strawberries, cherries, and black currants, on account of the crops being below the average, although the imports of cherries were larger than in the preceding year, having amounted to 219,367 bushels in May, June, July, and August, against 195,627 bushels in the corresponding months of 1895. Cherries arrive in London from abroad in May, and continue to come until the first week in August. In the months of May and June in 1896 before English cherries were ready, no less than 123,526 bushels of cherries had been imported, so that the desire for cherries had been considerably satisfied when the home-grown fruit was ripe.

The prices realised for English cherries were good, ranging between 2s. 6d. and 11s. 6d. per half sieve (24 lbs.). In the early part of the season prices were high, in the middle they went down somewhat, and towards the close the best "Napoleons" and "Florence Hearts" made as much as 10s. to 11s. 6d. per 24 lbs. The average price of Kentish cherries was about 6s. per 24 lbs. clear of the expenses of carriage and commission.

Strawberries brought from 2s. to 6s. per peck of 12 lbs., deducting rail charges and commission, and the average price appears to have been close upon 2s. 10d. per peck.

Gooseberries fetched from 2s. 6d. to 4s. 6d. per half sieve of 28 lbs., free of charges, at the beginning of the season, and from 1s. 10d. to 4s. later on, the average price of this fruit being about 3s. per half sieve clear of railway expenses and commission.

Good prices were obtained for red and black currants, as the home crop, especially of black currants, was rather short, and the importations from abroad were not quite so large as usual. The range for red currants was between 2s. 10d. and 4s. per half sieve of 24 lbs. clear of rail and commission charges, and the average was about 3s. 1d. per half sieve. Black currants brought from 5s. 6d. to 7s. 6d. per half sieve of 24 lbs. free of charges, while the average price would be at least 6s. 6d. per half sieve.

Plums did not make such good prices as the under average crop led the growers to expect, but the importations were very large, amounting to 138,023 bushels in July and to 340,841 bushels in August, as against 59,040 bushels in July 1895, and 187,389 bushels in August 1895. Prices ranged from 1s. 2d. per half sieve of 28 lbs. for common "bush" plums to 5s. 4d. for best Pond's seedlings, and the average price was about 2s. 10d. per half sieve, free of cost of carriage and commission.

Damsons, though not a large crop, were low in price, and did not bring more, on the average, than 1s. 8d. per half sieve of 28 lbs. clear of commission and carriage. The general appearance and quality of this fruit were, however, not so good as usual.

By far the most unsatisfactory prices were obtained for apples, in spite of the fact that the crop was small. Fine varieties, as Lord Suffield, Beauty of Kent, Golden Noble, Blenheim Orange, Lord Derby, Wellington, Cox's Pomona, and Warner's King, only made from 2s. to 5s. per bushel, or sieve, clear of charges. Very showy sorts, such as Quarrendens, made 6s. to 7s. per bushel, and for Cox's Orange Pippin, where well grown and clear, as much as from 9s. to 10s. per bushel was obtained, free of charges. It is computed that the average net return from apples was not more than 2s. 6d. per bushel to the grower. Seeing the enormous importations of apples into this country, these low prices for home produce are easily explained. During 1896, 6,177,192 bushels of apples were imported, valued at 1,582,471*l.*, or 5s. 1d. per bushel. This is the largest importation of apples ever known in this country. The greater part came from the United States and Canada, where the apple crops were very abundant last year, but quantities of apples came from Tasmania and Australia in April, May, and June.

In January 1897 there was a further large arrival of apples, and probably the influx from America and Canada will continue until March.

The average value of the imported apples in 1896, viz., 5s. 1d. per bushel, appears large compared with the average price obtained for English apples, which was 2s. 6d., or 3s. 4d. with the expenses of carriage and commission added, which may be put at 10d. per bushel. It must be remembered, however, that Australian, American, and Canadian exporters take care to pick out the "wormy" specimens (attacked by the Codlin Moth), and to grade the apples, and that only those of good size, colour, and quality are exported. Their apples, therefore, can always be depended upon, and large orders are given for them by dealers in Great Britain to supply co-operative stores and shops. Only the best fruit is sent from abroad, whereas with regard to British apples the whole crop is consigned at once to market, except in cider-making counties, in most cases without any grading or sorting, and no pains, as a rule, are taken to consign an even sample. In the above-named apple-exporting countries there has been great improvement in respect of the quality and appearance of

the fruit, besides being uniform in size, the apples are good in colour and shape, and their flavour generally has greatly improved. Some of the Australian apples are brilliant, though somewhat lacking in flavour.

Really well-grown and selected British apples of some varieties, such as the Cox's Orange Pippin, for example, are better in flavour and general quality than any of foreign production. In this last season graded Cox's Orange Pippins of the best shape and colour—and their colour was exceptionally fine—easily made 10s. per bushel.

Pears were not a good crop, and their prices were not satisfactory, as the fruit in many instances was not very well grown. They ranged between 1s. 6d. and 4s. 3d. per half sieve net to the grower. The imports of this fruit in 1896 were large, amounting to 483,823 bushels, valued at 206,674*l.*, or about 8s. 7d. per bushel.

Filberts and cob nuts were low in price, from 3d. to 3½d. per pound. Prices of this fruit are now much depressed by the increasing importations from various countries, where the cultivation of these nuts, once peculiar to Kent, is rapidly extending.

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## THE IMPORT TRADE IN EGGS.

Eggs have for many years been a considerable item in the accounts of our import trade in food stuffs. Fifty years ago the net annual importation of this product of the poultry yard amounted in number to less than 'three eggs per head of the people of Great Britain and Ireland, but so great has been the subsequent growth of the trade that in 1896 the supply from abroad represented an allowance of 40 foreign eggs for each inhabitant of this country. The total quantity of eggs imported in 1896 was 1,589,387,000, of the declared value of 4,185,000*l*. The number of imported eggs retained annually for home consumption at intervals of five years since 1846 has been as follows:—

Year.	No.	Year.	No.
1846 - -	72,252,000	1876 - -	752,928,000
1851 - -	115,522,000	1881 - -	756,107,000
1856 - -	117,206,000	1886 - -	1,032,266,000
1861 - -	203,291,000	1891 - -	1,273,017,000
1866 - -	438,877,000	1896 - -	1,586,000,000
1871 - -	406,150,000		(approximate).

In connexion with these figures it may be observed that from 1840 to 1853 eggs imported from foreign countries, not British possessions, were subjected to an import duty of 10½*d*. per great hundred; but this was reduced in 1853 to 4*d*.,\* and finally abolished in 1860. A duty of 2½*d*. per great hundred was also imposed on eggs received from British possessions between 1842 and 1853; in the latter year it was altered to 2½*d*. per great hundred, and ultimately removed in 1860.

Until 1870 upwards of 90 per cent. of the total quantity of eggs imported yearly into the United Kingdom were received from French ports, and, although France still contributes a large proportion of these imports, her consignments to this country have constituted a steadily declining proportion of our gross receipts during the past 20 years. Some idea of the changes which have taken place in the latter period in the relative position of the countries contributing to the supply may be gathered from the following statement of the average annual imports credited to various countries in the annual statements of trade in three-year periods since 1875. It must, however, be

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\* In 1854 an alteration was made in the method of assessing the duty: foreign eggs were charged at 8*d*. per cubic foot (about 200 eggs), and eggs from British possessions at 4*d*. per cubic foot.

pointed out that the bulk of the receipts from Belgian ports consists of Italian and Austrian eggs, while those arriving from German ports are for the most part the produce of Russia and Austria-Hungary; Italian eggs also form a large proportion of the imports credited to France. Neither Belgium nor Germany produce sufficient eggs to meet the demands of their own populations.

Period.	Average Number of Eggs imported annually from Ports in						
	Germany.	France.	Belgium.	Russia.	Denmark.	Canada.	Other Countries.
	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.
1875-77	119,381	508,042	53,439	—	24,291	—	38,275
1878-80	177,937	413,088	79,013	—	35,004	—	60,902
1881-83	207,780	359,698	176,487	—	51,470	—	40,635
1884-86	285,014	392,685	246,140	5,323	71,828	—	9,033
1887-89	399,889	348,895	263,356	53,372	100,786	—	9,463
1890-92	333,253	388,847	227,256	159,141	142,176	21,759	16,927
1893-95	355,877	359,661	294,239	204,980	144,918	35,555	30,142
1896	351,653	393,093	269,255	288,740	187,995	60,033	38,608

With reference to what has been said above as to the origin of the eggs arriving in this country from ports in Germany and Belgium, it may be interesting to contrast the actual exports to the United Kingdom of eggs produced in those countries with the numbers shown to have been received in the foregoing statement. In the case of Germany the average annual quantity of eggs from German poultry yards shipped to the United Kingdom in 1893-95 amounted to only  $3\frac{1}{4}$  millions, as compared with the 356 millions credited to Germany in our trade returns, the difference having been made up almost entirely of Russian and Austro-Hungarian products in transit to this country. Then, as regards Belgium, an examination of her trade statistics for the same period has shown that the average annual consignments of Belgian eggs to the United Kingdom did not exceed 27 millions out of the 294 millions shown in the statement, the surplus having consisted for the most part of Austro-Hungarian and Italian eggs. There is also a considerable transit trade across France, over 30 per cent. of the eggs we received in the three years 1893-95 from French ports having been produced in Italy. From the results of this investigation of the origin of the imports it would appear that the principal contributors to our supply of foreign eggs are Russia, Austria-Hungary, Italy, and France, though Denmark has also occupied a prominent position in this trade in recent years.

The average value of the eggs imported annually during the past 25 years has ranged from  $7\frac{1}{2}d.$  to just over  $10\frac{1}{4}d.$  per dozen, the maximum having been reached in 1874. The fluctuations in

the declared value per dozen of the imports since 1856 are shown below, the amount of the duty having been deducted in the years prior to 1861 :—

Year.	Price.	Year.	Price.	Year.	Price.
	<i>d.</i>		<i>d.</i>		<i>d.</i>
1856	- 6·8	1870	- 7·37	1884	- 8·44
1857	- 7·2	1871	- 9·09	1885	- 8·42
1858	- 6·5	1872	- 9·55	1886	- 8·02
1859	- 6·5	1873	- 10·29	1887	- 8·15
1860	- 8·3	1874	- 10·30	1888	- 7·88
1861	- 7·7	1875	- 9·95	1889	- 7·96
1862	- 7·3	1876	- 10·02	1890	- 8·00
1863	- 7·2	1877	- 9·48	1891	- 7·92
1864	- 7·15	1878	- 9·23	1892	- 8·18
1865	- 7·31	1879	- 8·62	1893	- 8·42
1866	- 7·27	1880	- 8·61	1894	- 7·65
1867	- 7·10	1881	- 8·84	1895	- 7·55
1868	- 7·5	1882	- 8·44	1896	- 7·58
1869	- 7·34	1883	- 8·37		

These figures represent the average declared value of the imports of each year, but it is well known that the price is much higher in winter than in summer, the market quotations in the former season being usually nearly double those prevailing in the summer months.

Owing to the difficulties to which reference has been made in connexion with the question of the country of origin of the imports, it is not possible to calculate accurately from the import statistics the value per dozen of the different varieties of foreign eggs which reach our markets. An examination of the declared values for the past three years shows that the consignments from Russia and Germany have been of a lower average value than those from Belgium, France, and Denmark, and from a closer analysis of the trade returns of the various countries concerned it is evident that the Russian and Austro-Hungarian eggs are, as a rule, cheaper than those from the other chief exporting countries. French eggs are the dearest of the imported kinds, and those from Italian and Danish poultry yards apparently rank next in value.

In Russia the production of eggs for export has developed to a remarkable extent during the past 10 or 15 years. According to the trade statistics of that country, it appears that in 1880 the total number of eggs exported was only 77 millions, in 1885 it had risen to 235 millions, five years later it was 755 millions, and in 1895 it was 1,411 millions. The largest consignments are sent to Austria-Hungary and Germany.

The popular varieties of poultry in the Russian Empire consist for the most part of local breeds, and hitherto little attention has been given to the improvement of the native stock by the introduction of fresh strains from abroad. In some districts a good fowl is bred, known as the *gollandsk*, descended from a cross between the native race with Cochin China hens



imported into the country many years ago, and in Central Russia a special race of small fowls is met with called *parlovsk* celebrated for the beauty of their plumage and for their laying qualities. In the provinces of Kharkhov, Poltava, and Tchernigov there is a popular variety of big hens, known as the *oushanki*, with tufts of feathers on their heads, which droop down each side over the ears. These birds are good layers and rear large broods. Another variety which is largely kept in the Moscow governments are the so-called *orlovsk* fowls; these resemble the Malay hens in build.

Improved methods of breeding and feeding poultry are, it appears, little known in Russia, and artificial hatching with incubators is practised only on a limited scale. Eggs intended for export are packed in the familiar long wooden boxes divided into two sections, each box containing 12 great hundreds, or 1,440 eggs, placed in layers separated by straw. For the past few years foreign dealers have appointed purchasing agents in many of the governments south of Moscow, by whom the eggs are collected and sorted prior to export. Since 1886 a trade has sprung up in the yolks and whites of eggs, of which 24,000 cwts. were exported in 1894, and 33,000 cwts. in 1895. The bulk of these products is sent to Germany and Spain, though Great Britain is also debited with consignments amounting, on the average, to over a thousand cwts. yearly.

In Austria-Hungary the production of eggs for exportation has been a growing industry for the past quarter of a century. Prior to 1870 the trade had assumed appreciable proportions, but eggs were not separately distinguished in the Austro-Hungarian returns until 1873, when 138 millions were returned as exported. The development in recent years has been remarkable. In 1891 the exports of eggs, ostensibly Austro-Hungarian produce, amounted to 805 millions, and in 1895 they had risen to 1,319 millions. It is to be noted, however, that in the latter year no less than 581 million eggs, chiefly of Russian origin, were imported into Austria-Hungary, apparently for consumption in that country. About 75 per cent. of the exports are consigned to Germany, whence large quantities ultimately find their way to Great Britain. There is also a considerable transit trade in eggs from Russia. The bulk of the Austro-Hungarian eggs are produced in South Hungary, Galicia, and Croatia.

For a number of years France was the principal contributor to our supply of foreign eggs, but the competition of the other countries referred to above has gradually ousted her from this position, though the consignments from French ports are still of considerable dimensions, and they realise, as a rule, the best price in the import market. The production of poultry and eggs is largely carried on in Normandy and Brittany, where nearly every peasant and farmer keeps fowls. In these provinces pure-bred Houdans, Crèveceurs, and La Flèche fowls are met with, but the popular barn-door fowl is a fine large black mongrel, showing traces of the three breeds mentioned, and in some cases

of the Langshan. Fowls are carefully tended by Norman and Breton producers, and have the free run of the meadows and orchards. Great attention is usually paid to the question of feeding. Eggs are collected by pedlars and small dealers by whom they are conveyed to the great exporting houses, where they are sorted and packed before shipment.

The number of French eggs exported from France in 1871 amounted to 290 millions; 471 millions were exported in 1876; 310 millions in 1886; and 252 millions in 1895. The value of these exports in 1895 was 793,000*l*. The number of eggs imported into France, for consumption in the country, in the last-mentioned year was 101 millions.

The exports of eggs from Italy averaged about 72 millions from 1867 to 1873, in 1874 and 1875 they amounted to 125 and 131 millions respectively, but in 1876 they rose to 356 millions, and ranged from 304 to 361 millions in the succeeding five years to 1881. The export was maintained at about this level until 1887, when it fell to 279 millions, and from 1887 to 1892 it ranged between that figure and 203 millions. During the past three years, however, the shipments have again attained their former dimensions—in 1895 they amounted to about 356 millions, of the value of 1,283,818*l*.

In Denmark the importance of poultry rearing as a remunerative adjunct to the ordinary business of farming began to be recognised about 15 years ago, when several societies were formed for the improvement of Danish poultry. French, Italian, and Spanish fowls were imported to strengthen the natural breeds, but it was eventually found that the Italian and Spanish (Minorcas) varieties were best suited for the climate. Attempts were also made to improve the original strain of the country by careful selection, and at a later period Asiatic breeds were introduced and largely used for crossing, in order to increase the production of brown eggs, for which Danish producers found there was a considerable demand in the United Kingdom. In 1888 the number of poultry in Denmark was estimated at about 4,500,000, and in 1893 the number was ascertained to be about 5,856,000 head, thus representing an increase of over 25 per cent. within five years.

The export of eggs from Denmark have increased considerably during the past 20 years. In 1866–67 the number of Danish eggs exported was less than a million; 10 years later it was nearly 19 millions; in 1887–88 the export was 85 millions; and in 1894–95 it amounted to 154 millions. Nearly the whole of these exports are shipped to the United Kingdom. The imports of eggs into Denmark have ranged from 10 to 20 millions annually since 1888–89.

The Danish egg trade has hitherto been for the most part in the hands of a few large firms, by whom the eggs are collected, sorted, and packed, but an interesting development has recently taken place in the formation of a large co-operative association for the exportation of eggs direct to the United Kingdom

without the intervention of middlemen. This society was established at Vejle in Jutland in February 1895, and all its members are producers. Its object is stated to be the improvement of the Danish export trade in eggs, and to obtain better prices for these products. When it first started the association had only 24 district branches and less than 2,000 members, but in April last there were over 14,000 members enrolled in 200 branches situated in all parts of Denmark. Eggs collected by the local branches are forwarded to a central dépôt, where they are sorted and packed and at once shipped to this country. In order to keep some control over the quality of the goods delivered, eggs arriving from the district branches are stamped with the number of the branch as well as with the number of the member who supplied them, and the branches are expected to make deliveries to the central dépôt within a few days of the receipt of supplies from their members.

The position of the egg trade of Belgium has already been noticed in an earlier number of this Journal,\* and it need only be observed here that the production of eggs in that country is not sufficient to meet the home demand. There is, however, a considerable export trade in eggs consisting mainly of Austro-Hungarian and Italian products in transit to the United Kingdom.

In Germany also the annual production of eggs falls considerably short of the quantity required for the home consumption, and consequently large quantities are imported, mainly from Russia and Austria-Hungary. It has been estimated that the quantity of foreign eggs consumed annually in Germany amounts at the present time to 33 per head of the population.

Among the remaining countries which export eggs to the United Kingdom, Canada, and Morocco are deserving of some attention, for although supplies from these sources are as yet comparatively inconsiderable, they have recently exhibited signs of development. In the former country great efforts are being made to stimulate the industry of poultry rearing with a view to the promotion of the export trade. According to the census returns the value of the stock of hens and chickens in Canada was estimated, in 1891, at about 2,500,000*l*. Although the Canadian producers of poultry and eggs still find their chief market in the Dominion, there is an increasing export trade in eggs to the United Kingdom. Formerly the United States was practically the sole foreign purchaser of Canadian eggs, but since the introduction of the McKinley Tariff the trade has been largely diverted to the United Kingdom. From 1883 to 1890, the exports from Canada to her southern neighbour ranged annually from 170 to 180 millions. In 1891, however, they declined by 50 per cent. and have amounted only to about 25 millions annually during the past three years. Finding the market in the United States restricted by the high

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\* Vol. II., No. 4, p. 408.



rates imposed on eggs, Canadian producers turned their attention to the United Kingdom, and the consignments to this country from Canada have steadily increased since 1892.

The imports of eggs from Morocco have recently been of sufficient dimensions to merit a notice in the Trade Returns. Until 1893 our annual receipts of Barbary eggs had not exceeded a million, but the quantity received during the past year was 6,334,000, and in 1895 it was over seven millions.

Norway, Sweden, Spain, Turkey, Egypt, Tripoli, the United States, Australia, and even Argentina, are included amongst the minor contributors to our supply of foreign eggs, but the aggregate annual consignments from all these sources have represented hitherto a comparatively insignificant proportion of the total importation.

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## THE FERTILISERS AND FEEDING STUFFS ACT, 1893.

Reports received by the Board of Agriculture show that samples were analysed under the Fertilisers and Feeding Stuffs Act, 1893, in 54 counties or county boroughs during the year 1896, the total number of samples analysed having been 797, of which 552 were fertilisers and 245 feeding stuffs.

As District Agricultural Analysts were appointed for all counties (with one exception) in 1894, two complete years have now elapsed since the Act has been in full operation throughout the country. A comparison between 1896 and 1895 is therefore possible. It appears that during 1896 there was an increase of 182—141 fertilisers and 41 feeding stuffs—in the total number of samples analysed. The increase has been greatest in England. In 1895 more samples were analysed in Scotland than in the former country, but during the past year more than half the analyses were made in England and Wales.

The comparison between 1896 and 1895 for the whole country stands as follows:—

—	Number of Counties reporting Analyses.		Total Number of Samples analysed.	
	1896.	1895.	1896.	1895.
England, counties - -	26	27	362	235
„ boroughs - -	3	1	35	35
Wales, counties - -	5	5	22	23
Scotland, counties - -	20	21*	378	322
GREAT BRITAIN - -	54	54	797	615

The number of analyses made in each of the four quarters of 1896 may be shown as under:—

—	Fertilisers.				Feeding Stuffs.			
	Quarter.				Quarter.			
	1st.	2nd.	3rd.	4th.	1st.	2nd.	3rd.	4th.
England, counties -	73	102	7	28	40	28	40	44
„ boroughs -	5	5	1	3	6	2	5	8
Wales, counties -	5	1	—	13	2	—	—	1
Scotland, counties -	85	205	12	7	24	9	16	20
GREAT BRITAIN -	168	313	20	51	72	39	61	73

The following summary shows the number of samples analysed in each county reporting analyses in 1896 and 1895:—

Counties.	1896. Number of Samples analysed.			1895. Number of Samples analysed.		
	Ferti- lisers.	Feed- ing Stuffs.	Total.	Ferti- lisers.	Feed- ing Stuffs.	Total.
ENGLAND:—	No.	No.	No.	No.	No.	No.
Bedford - - - - -	—	—	—	—	1	1
Chester - - - - -	3	—	3	3	3	6
Cornwall - - - - -	1	—	1	1	—	1
Derby - - - - -	—	—	—	1	—	1
Devon - - - - -	7	6	13	3	6	9
Dorset - - - - -	2	30	32	2	1	3
Durham - - - - -	10	3	13	9	3	12
Essex - - - - -	16	4	20	5	1	6
Gloucester - - - - -	2	2	4	1	—	1
Hereford - - - - -	4	—	4	—	—	—
Kent - - - - -	1	1	2	12	3	15
Lancaster - - - - -	2	—	2	—	—	—
Leicester - - - - -	2	1	3	1	3	4
Lincoln, parts of Holland - - - - -	9	—	9	3	—	3
"    "    Kesteven - - - - -	—	6	6	1	1	2
"    "    Lindsey - - - - -	—	—	—	—	1	1
Monmouth - - - - -	37	34	71	14	20	34
Norfolk - - - - -	1	—	1	—	—	—
Northumberland - - - - -	—	—	—	—	1	1
Oxford - - - - -	—	8	8	1	2	3
Salop - - - - -	20	25	45	27	17	44
Soke of Peterborough - - - - -	—	—	—	3	—	3
Somerset - - - - -	27	1	28	21	5	26
Stafford - - - - -	7	5	12	2	1	3
Suffolk, Eastern Division - - - - -	1	—	1	—	7	7
"    Western " - - - - -	1	—	1	—	—	—
Surrey - - - - -	3	—	3	—	—	—
Sussex, Eastern Division - - - - -	—	—	—	—	1	1
Westmorland - - - - -	35	18	53	16	13	29
Wilts - - - - -	—	—	—	3	1	4
Worcester - - - - -	10	—	10	9	3	12
York, East Riding - - - - -	8	5	13	—	3	3
"    West " - - - - -	1	3	4	—	—	—
County Boroughs:—						
Croydon - - - - -	1	—	1	—	—	—
Newport, Mon. - - - - -	13	20	33	19	16	35
Wolverhampton - - - - -	—	1	1	—	—	—
Total England - - - - -	224	173	397	157	113	270



Counties.	1896.			1895.		
	Number of Samples analysed.			Number of Samples analysed.		
	Ferti- lisers.	Feed- ing Stuff.	Total.	Ferti- lisers.	Feed- ing Stuff.	Total.
WALES:—	No.	No.	No.	No.	No.	No.
Brecon - - - - -	—	—	—	—	2	2
Cardigan - - - - -	5	—	5	3	2	5
Carmarthen - - - - -	2	—	2	3	—	3
Denbigh - - - - -	1	—	1	—	—	—
Montgomery - - - - -	8	3	11	7	4	11
Pembroke - - - - -	3	—	3	2	—	2
Total Wales - - - - -	19	3	22	15	8	23
SCOTLAND:—						
Aberdeen - - - - -	57	3	60	38	4	42
Argyll - - - - -	7	2	9	—	—	—
Ayr - - - - -	44	—	44	26	2	28
Banff - - - - -	6	1	7	4	—	4
Berwick - - - - -	6	3	9	5	4	9
Bute - - - - -	7	1	8	3	—	3
Dumbarton - - - - -	—	—	—	3	—	3
Dumfries - - - - -	14	—	14	10	4	14
Fife - - - - -	3	—	3	—	—	—
Forfar - - - - -	1	13	14	1	9	10
Kincardine - - - - -	6	2	8	4	—	4
Kinross - - - - -	—	—	—	1	2	3
Kirkcudbright - - - - -	13	6	19	14	11	25
Lanark - - - - -	14	—	14	19	—	19
Linlithgow - - - - -	10	1	11	13	1	14
Midlothian - - - - -	16	7	23	8	17	25
Peebles - - - - -	1	—	1	—	1	1
Perth - - - - -	72	20	92	58	16	74
Renfrew - - - - -	4	3	7	7	4	11
Ross and Cromarty - - - - -	11	4	15	12	3	15
Roxburgh - - - - -	—	—	—	4	—	4
Selkirk - - - - -	—	—	—	2	3	5
Stirling - - - - -	2	1	3	—	—	—
Wigtown - - - - -	15	2	17	7	2	9
Total Scotland - - - - -	309	69	378	239	83	322
Total GREAT BRITAIN - - - - -	552	245	797	411	204	615

## FARMERS AND ASSESSMENTS TO LOCAL RATES.\*

The following memorandum, which has been prepared by the Local Government Board, directs the attention of occupiers of land in England and Wales to the principles upon which assessments are made to the poor rates and other local rates, and explains the steps which may be taken, where an assessment is objected to, to obtain a reduction of the amount on the ground that the premises have been valued at too high a figure, or that the valuation has been maintained at a level above the actual value. The third part of the memorandum sets out the later alterations effected by the Agricultural Rates Act, 1896, as regards the liability of occupiers of land not occupied by buildings to local rates in the five years commencing 1st April 1897.

## MEMORANDUM.

Outside of London the basis for the assessment of the poor rate, and practically of every other local rate levied under the general law, is, where the Union Assessment Acts are in force, the valuation list made under those Acts. There are only 10 places in England and Wales, outside London, where the Union Assessment Acts are not in force.†

I.—*As to the Poor Rate.*

The poor rate is assessed upon the net annual, or rateable, value of premises, as fixed by the valuation list. The rateable value is arrived at by making certain deductions from the gross estimated rental of the premises, which is the rent at which the property might reasonably be expected to let from year to year, if the tenant paid all usual tenant's rates and taxes, and tithe rentcharge, if any. It is not necessarily the same as the rent actually paid for the property.

The deductions to be made from the gross estimated rental, in order to arrive at the rateable value, are the probable average annual cost of the repairs and insurance, and any other expenses that may be necessary to maintain the property in a state to command a rent equal to the gross estimated rental.

If a person considers that his assessment to the poor rate is too high, he must, in the first place, give notice to the assess-

\* Reprinted from a leaflet issued in February, 1897, of which copies can be obtained on application to the Secretary, Board of Agriculture, 4, Whitehall Place, S.W.

† These places are the parishes of Alverstoke, Barrow-in-Furness, Birmingham, East Stonehouse, Liverpool, and Stoke Damerel; the Township of Manchester; and the Poor Law Incorporations of Kingston-on-Hull, Plymouth, and Southampton.

ment committee and to the overseers that he objects to the valuation list on which the rate is based. The notice must be in writing, and must specify the grounds of the objection. It may be served on the assessment committee by being left at the office of the clerk to the board of guardians, or sent by post, addressed to the committee at such clerk's office, or delivered personally to the clerk of the assessment committee (*i.e.*, the clerk to the guardians) or at his usual place of abode.

On notice of the objection being given, a day will be appointed by the assessment committee for the hearing of the objection, and on such hearing the committee have full power to call for and amend the valuation list. If they do amend it, they must give notice of the amendment to the overseers, who are thereupon to alter the poor rate current at the date of the notice of objection; so that, if on the hearing of an objection made by a farmer or other person against his assessment, the assessment committee reduce the assessment, the objector will only be called upon to pay on the reduced amount the rate current at the time when he made his objection. The reduction will take effect also as regards any rate made subsequently.

Supposing that the objector fails to obtain from the committee such relief in the matter as he considers he is entitled to, the only course open to him is to appeal to the next practicable special or quarter sessions against the poor rate. He cannot appeal against the rate unless he has first objected to the valuation list in the manner above referred to, and has failed to obtain relief from the assessment committee.

If he appeals against the rate he must give 21 days' notice in writing previous to the holding of the sessions to which the appeal is to be made, of his intention to appeal, and the grounds thereof, to the assessment committee and the overseers.

The justices on the hearing of an appeal against the poor rate are empowered to amend the rate by altering the sum therein charged on any person, or in any other manner which may be necessary for giving such relief as they think just; and in certain cases they may quash the rate. If the rate is amended, the valuation list must be altered by the assessment committee in conformity with the amendment.

If the decision of the justices in special sessions is against the appellant, he may carry the appeal to general or quarter sessions. But in the vast majority of instances in which persons who have been over-assessed take action in order to get their assessment reduced, no appeal against the poor rate is necessary: the relief desired is obtained by the simple process of objection to the valuation list before the assessment committee.

With respect to places in which the Union Assessment Acts are not in force, it may be stated generally that subject to the provisions of any local Act, the procedure for obtaining a reduction of assessment is by appeal against the poor rate to special or quarter sessions.



## II.—*As to Rates other than the Poor Rate.*

The principal rates other than the poor rate which are levied under the general law, are the borough rate, the county rate, the highway rate, the general district rate, and certain rates levied for sanitary purposes in rural districts.

When the whole parish is liable to contribute to the borough rate or county rate, the sum required is paid out of the poor rate. Where only part of the parish is liable, a separate rate is levied in such part in the same manner as the poor rate, and the same observation applies to sums required for the expenses of school boards and burials boards. All these rates are based practically on the valuation list; and it would seem that if the assessment committee amend the valuation list after hearing an objection to the list, any of these other rates should be correspondingly amended without any formal appeal against it.

As regards the highway rate, it is expressly provided that where any valuation list has been amended by the assessment committee on objection, the committee shall give notice of such amendment to the surveyor of highways, or other person authorised to make and levy the highway rate, who shall thereupon alter the then current highway rate accordingly.

As regards the general district rate levied by an urban authority, it has been held by the Queen's Bench Division of the High Court of Justice that where, subsequently to the making and demand of a general district rate, the valuation list upon which the rate was based was amended by the assessment committee by the reduction of the assessment of particular premises, there was shown, upon a summons for non-payment of the full amount of the rate as assessed upon the premises, sufficient cause for non-payment of so much of the rate as was assessed on the amount of rateable value in excess of that to which the assessment committee had reduced the assessment, although there had been no appeal against the general district rate.

The urban authority are empowered to reduce the sum at which any person has been assessed in the rate, if he has been over-rated, *i.e.*, if he has been assessed on a higher rateable value than that entered in the valuation list in respect of his property.

If a person assessed in any of the above rates considers that he is over-rated, and is unable, in any other way, to obtain such relief as he considers himself entitled to, he may appeal against the rate.

In the case of a highway rate, he may appeal to the justices at the next practicable general or quarter sessions. For the purposes of such an appeal notice in writing must, within 14 days after the making of the rate, be given to the surveyor of highways, waywarden, or urban authority, as the case may

be, of the intention to appeal, and the notice must be accompanied by a statement of the grounds of appeal.

On the hearing of the appeal, the justices may amend or, if necessary, may quash the rate.

An appeal against a general district rate lies to the next court of quarter sessions held not less than 21 days after the demand of the rate. Fourteen days' notice of the appeal must be given to the urban authority, and the notice must state the ground of appeal.

In the case of separate rates levied by overseers to meet expenses of rural district councils, the same appeal lies to special or quarter sessions, as in the case of the poor rate.

Separate borough rates and separate rates to meet contributions required by a county council may also be appealed against in like manner as a poor rate, and the same remark applies to separate rates to meet the expenses of a school board.

Appeals against rates levied under the Lighting and Watching Act, 1833, may be made to general or quarter sessions, subject to the same provisions as appeals against poor rates.

### III.—*Reduced Assessments in respect of Land not occupied by Buildings.*

Occupiers of land used as arable, meadow, or pasture ground only, or as woodlands, allotments, orchards, market gardens, or nursery grounds, are assessable to a general district rate in an urban district in respect of such land, in the proportion of one-fourth part only of the rateable value according to the valuation list; and in the case of a separate rate for special sanitary expenses in a rural district they are, according to circumstances, either to be assessed in respect of one-fourth part only of the rateable value of the land, or are to pay in respect of it one-fourth part only of the rate in the pound payable in respect of houses and other property.

Occupiers of houses, buildings, and property (other than land) are required to pay, in respect of their assessment to a lighting rate under the Lighting and Watching Act, a sum in the pound three times that paid by occupiers of land. So that, if the rate on other property is 6*d.* in the pound, occupiers of land have to pay only 2*d.* in the pound.

Failure, in rating such occupiers, to allow the partial exemption for which the Acts provide, would be a good ground of appeal against any of the three rates above mentioned.

In the case of rates which the occupier of agricultural land has hitherto paid in full, or in the proportion of more than half, he will during the five years commencing on the 1st April 1897, be liable to pay one half only of the rate in the pound payable on buildings and other hereditaments. This partial exemption will, however, not apply to rates assessed under any commission of sewers or in respect of any drainage, wall, embankment, or other work for the benefit of the land. The expression "agri-

cultural land" means any land used as arable, meadow, or pasture ground only, cottage gardens exceeding one-quarter of an acre, market gardens, nursery grounds, orchards, or allotments, but does not include land occupied together with a house as a park, gardens other than as aforesaid, pleasure grounds, or any land kept or preserved mainly or exclusively for purposes of sport or recreation or land used as a racecourse.

After the 31st March 1897, the rateable value of agricultural land is to be stated separately from that of buildings or other hereditaments in the valuation list.

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## REPORTS ON FOREIGN CROPS.

## UNITED STATES HARVEST OF 1896.

The report of the Statistician of the Department of Agriculture of the United States for December last, contains the final estimate of the acreage and yield of the principal crops of 1896.

The total area and production of the cereals, potatoes, and hay are given below, the quantities being shown in Winchester bushels :—

Crop.	Area.		Production.	
	1896.	1895.	1896.	1895.
	Aeres.	Aeres.	Winchester Bushels.	Winchester Bushels.
Maize - - -	81,627,000	82,076,000	2,283,875,000	2,151,139,000
Wheat - - -	34,619,000	34,047,000	427,684,000	467,103,000
Oats - - -	27,566,000	27,878,000	707,346,000	824,444,000
Rye - - -	1,831,000	1,890,000	24,369,000	27,210,000
Barley - - -	2,951,000	3,300,000	69,695,000	87,573,000
Buckwheat - -	755,000	763,000	14,090,000	15,341,000
Potatoes - -	2,767,000	2,955,000	252,235,000	297,237,000
			Tons.	Tons.
Hay - - -	43,260,000	44,206,000	59,282,000	67,079,000

The average value of wheat on the farm is estimated at 3s. per bushel, an increase of  $10\frac{3}{4}d.$  compared with last year, and  $6\frac{1}{4}d.$  above the average of the preceding five years. With regard to farm crops in general it may be remarked that wheat and potatoes alone show any rise in price compared with 1895, when prices were lower than for many years.

The total wheat acreage of the United States showed a recovery in the year 1896, there having been about 570,000 acres more under this crop than in 1895. The area was, however, about  $1\frac{3}{4}$  million acres below the average for the last five years, and about 5,300,000 acres below the acreage under the crop in the year 1891. The yield per acre in 1896 was only one bushel below the quinquennial average of 13·4 bushels per acre.

The average yield per acre of maize was 28·2 bushels as compared with 26·2 in 1895. The value per bushel declined to  $10\frac{3}{4}d.$  per bushel from 1s.  $1\frac{1}{4}d.$  in the previous year, which was at that time reported to be the lowest price on record.

The average yield per acre of oats was 25·7 bushels against 29·6 in 1895, and the barley yield was 23·6 bushels in 1896 against 26·4 in the previous year.

## WHEAT CROP OF INDIA.

According to the general memorandum on the wheat crop of the season 1896-97 issued by the Government of India on the 24th December last, the failure of the autumn rains everywhere prevented the preparation of land for wheat and interfered with sowings except on irrigated land. There has, in consequence, been a contraction of the area under wheat, greatest in Central and Western India, but large also in Northern India. Prospects appeared very bad until the third week of November, when some rain fell which improved the condition of the standing crops in some degree, and permitted additional land to be sown. At the date of the memorandum the prospects of the growing crop were good, better in Northern India than elsewhere, but the usual winter rains were anxiously looked for.

The subjoined paragraphs summarise the reports which had been received:—

In the Panjab the area estimated to have been placed under wheat up to the end of November was 5,346,700 acres. This is upwards of a million and a half acres, or 22 per cent. less than the area finally estimated to have been placed under wheat last year, and that area was itself a little under the average. Sowings, however, were still proceeding.

In the North-Western Provinces and Oudh the area sown was reported to be 30 per cent. below the average. The average is about  $4\frac{3}{4}$  millions of acres, and consequently the area put under wheat in these provinces would seem to be about  $3\frac{1}{4}$  millions of acres. The area cropped last year, which was also a poor year, approximated to  $3\frac{3}{4}$  millions of acres.

In both the Panjab and the North-Western Provinces the conditions were very similar. The early cessation of the monsoon rains interfered with sowing generally except on irrigated lands, and prospects appeared to be of the worst until some rain in the third week of November helped the crop already sown and permitted of additional sowings. In the restricted area on which wheat is being grown prospects were on the whole good, especially on irrigated land, but the position depended upon the presence or absence of the usual winter rains.

In the Central Provinces the seasonal conditions which affected the sowing of wheat in Northern India had operated with even greater intensity. The area sown is estimated not to exceed  $1\frac{3}{4}$  millions of acres, a figure which contrasts unfavourably with the bad season of 1895-96, when over  $2\frac{1}{2}$  millions of acres were sown, the average of preceding years having been four millions. The decline is most marked in the northern districts and in Chattisgarh. In the rest of the provinces the area sown is from 65 to 75 per cent. of the average. In these provinces, as in Northern India, the rain which fell in November was very useful, and the prospects of the standing crops were in the main fair to good, but the winter rains were wanted.

The reports from Bombay stated that it seemed unlikely that the area sown would exceed  $1\frac{1}{2}$  million acres, being half the average. The rain which fell in November did some good in various places, but it was unequal, and the yield generally was expected to be very low unless good rain should fall. The failure is greatest in the Deccan districts, where the area sown was only a fifth of the average, and where, the rain in November having been light, its beneficial effect was smallest. The Karnatak was somewhat better in condition than the Deccan, the area sown there in British districts being a fourth and in the Native States a third of the average. In Gujrat the area is about 26 per cent. below the average. Sind is better off than any other part of the Presidency, or indeed of the whole country, the area sown there being only 9 per cent. below the average and much in excess of last year's area, but that was not a good year for wheat in Sind.

#### CROP PROSPECTS IN FRANCE.

A report on the state of the growing crops of wheat and rye in France, at the end of January 1897, was published in the *Journal Officiel* on the 2nd February.

For purposes of comparison, the figure 100 is used to represent the area under the same crop in the preceding year; and as regards the state of the young crops, 100 implies "very good"; 80, "good"; 60, "rather good"; 50, "passable"; 30, "middling"; 20, "bad."

The following table gives the figures as regards wheat only, and the mean for groups of departments:—

Divisions.	Area under Wheat in 1897. Per cent. of 1896 Area.	Condition of Crop at the End of January 1897.
North-west region - - - -	91	67
North region - - - -	86	64
North-east region - - - -	84	60
West region - - - -	91	72
Central region - - - -	83	59
Eastern region - - - -	84	57
South-west region - - - -	70	57
South region - - - -	92	69
South-east region - - - -	84	69
Corsica - - - -	85	50

An analysis of the figures for each department shows that, compared with the previous year, there has been an increase of wheat acreage in two departments only, viz.:—5 per cent. in Nord; and 2 per cent. in Morbihan. In nine departments the acreage under wheat is the same as in the previous year, and



there has been a diminution of from 1 to 5 per cent. in 16 departments. The decrease has been from 6 to 10 per cent. in 20 departments; from 11 to 20 per cent. in 21 departments; and above 20 per cent. in 18 departments.

As regards the condition of the crop at the end of January, the index number 100 was applied to two departments; 19 departments ranged from 99 to 80; 37 departments from 79 to 60; 21 departments from 59 to 50; five departments from 49 to 30. The crop in the Landes was reported to be "bad," and no report is given as regards two departments.

### THE AUSTRIAN HARVEST OF 1896.

The Ministry of Agriculture at Vienna has recently published estimates of the yield of the principal cereal crops in Austria in 1896. The results are embodied in the following table:—

Crop.		Area.	Total Production.	Yield per Acre, 1896.	Average Yield per Acre, 1886-95.
		Acres.	Bushels.	Bushels.	Bushels.
Wheat	- -	2,614,991	42,631,014	16·2	15·8
Rye	- - -	4,535,893	74,327,368	16·4	15·7
Barley	- - -	2,909,954	53,107,167	18·4	19·3
Oats	- - -	4,737,984	100,973,375	21·3	21·7
Maize	- - -	854,212	16,909,500	19·7	18·9

The total area under the above-named cereals (15,653,035 acres) represents a decrease of 72,690 acres, or 0·46 per cent., as compared with 1895. The decrease in the wheat area since the same year is given as 0·5 per cent., in barley 1·3 per cent., in oats 1·6 per cent., in maize 0·57 per cent., while rye has been augmented by 1·35 per cent.

The total production of both wheat and rye appears to have been greater than in 1895; while the other three cereals gave a smaller amount, although the yield per acre from maize was rather greater. None of the cereals, however, yielded more than the average of the ten years 1886-95, and maize alone was equal to it.

Taking all five crops together, the total produce from a slightly smaller acreage than last year represents a yield somewhat below the average. The quality of the grain does not appear to have been good, the average weight of a bushel being below the average for the four chief cereals, and only in the case of maize was the weight a normal one.

It may be noted that, if expressed in weight, the yield of wheat per acre is just about the average, instead of being higher as is indicated from a statement of the quantity in bushels.

## CROPS IN SWEDEN.

The Board have received the preliminary official summary of the results of the Swedish harvest of last year. The following table shows the estimated yields of the principal crops in 1896 as compared with the average for the ten years 1886-95 :—

Crops.							1896.	1886-95.
							Bushels.	Bushels.
Wheat	-	-	-	-	-	-	4,527,875	3,969,350
Rye	-	-	-	-	-	-	23,283,150	20,907,975
Barley	-	-	-	-	-	-	13,944,700	14,107,225
Oats	-	-	-	-	-	-	54,356,225	60,346,550
Peas and beans	-	-	-	-	-	-	1,671,450	1,720,125
Potatoes	-	-	-	-	-	-	61,634,650	51,992,875

The average weight of wheat grain per bushel in 1896 was estimated at 62·7 lbs., which was slightly above the average for the last 20 years. The weights of the other cereal grains were also rather above the average, being 58½ lbs. for rye, 50½ lbs. for barley, and 38 lbs. for oats.

## CROPS IN MANITOBA.

According to the final crop bulletin of Manitoba for 1896, which gives the actual yield of the various kinds of grain, the estimated yield as given in the August bulletin has not been realised. The crops were lighter on the ground, there was less straw, and the heads were not so well filled as was expected on the 1st of August. The following table gives a summary of the latest ascertained yields of the principal crops of the province :—

Crop.	Acreage.		Production.	
	1896.	1895.	1896.	1895.
	Acres.	Acres.	Bushels.	Bushels.
Wheat	999,598	1,140,276	14,371,806	31,775,038
Oats	442,445	482,658	12,502,318	22,555,733
Barley	127,885	153,839	3,171,747	5,645,036
Potatoes	12,260	16,716	1,962,490	4,042,562

The average yield of wheat for the whole province was only 14·33 bushels per acre against 27·86 bushels in the previous year, but the greater part of this is of a high grade, No. 1 or No. 2 hard. The expense of harvesting and threshing has not amounted to more than one half of the cost of saving last year's

crop, and the price received by farmers for this year's production is stated to have given them, on the whole, as much money as was realised from last year's immense harvest. The oat crop in many parts of the province has been disappointing; the yield was smaller than usual owing to rust or blight, and the grain is reported to have been of inferior quality in many districts. The yield of oats and barley is returned at 28.25 and 24.80 bushels per acre in 1896, against 46.73 bushels and 36.69 bushels in 1895.

The low price obtained for dairy products in 1895, and the possibility of another immense wheat crop, served for the time to check any special development of the dairy industry in Manitoba.

The area of land prepared for seeding was 969,000 acres, which is much in excess of the figures for the same date last year, and is said to promise a large acreage in wheat for 1897.

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#### VICTORIAN WHEAT HARVEST.

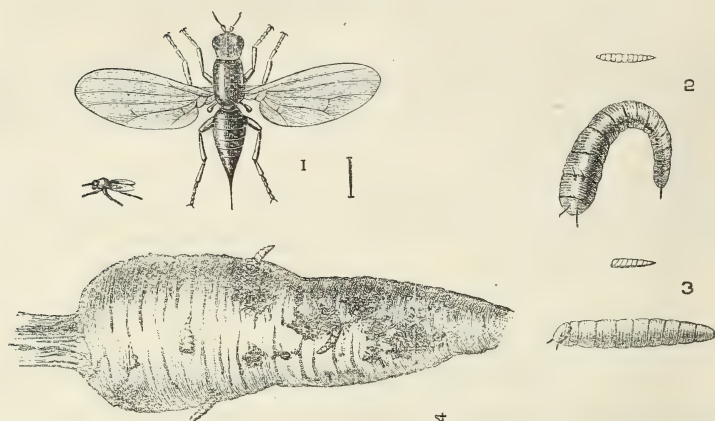
According to an account of the wheat harvest in Victoria given in *The Australasian*, it appears probable that Victoria will again suffer from a deficiency. The area under cultivation is estimated to be 1,493,500 acres, and the yield is expected to amount to 6,904,000 bushels, or an average of less than  $4\frac{2}{3}$  bushels per acre. Estimating the population in 1897 at 1,180,000, and the average consumption at 5 bushels per head, the food requirements will amount to 5,900,000 bushels, and the demand for seed for next year's crop amounts to 1,125,000 bushels, or a total requirement of 7,025,000 bushels. These figures consequently show a deficit of 121,000 bushels, against which there is probably a certain quantity of old wheat and flour in stock.

The *Melbourne Weekly Times*, however, says, speaking generally, that in no previous season have the crops given such irregular returns, and it is almost impossible to estimate correctly what the average yield will be. Though in some districts, such as the Central Wimmera, for instance, the crops have been very poor, yet in others they have turned out remarkably well, and are yielding much above the ordinary average. This is more particularly the case in the later districts, where the acreage under cereals has been greater than usual this season. Hay crops have been heavy in all but the dry northern and north-western districts, and, owing to favourable weather, have been secured in prime condition.

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## INJURIOUS INSECTS AND FUNGI.

THE CARROT FLY (*Psila rosæ*).

1. Fly, natural size and magnified; 2. Larva, natural size and magnified;  
3. Pupa, natural size and magnified; 4. Infested carrot showing rust spots.

Carrots are frequently much injured by the larvæ or maggots of this fly, which bore into and feed upon their roots, living upon them and causing them to become brown or rusty, and finally rotten. In some cases of early attack the growth of the small roots is entirely stopped. Carrots grown by market gardeners and market-garden farmers for "bunching," or pulling early, are not often materially injured as the fly does not appear until the middle of May, though the latest of the early pulled roots are sometimes disfigured and their value depreciated because of the rusty spots made by the larvæ; but those that are dug late for storing, either for human or for cattle food, are, however, very frequently seriously damaged and rot in the clamps and stores, and are unsaleable by reason of the rust marks upon them. It has been noticed that the carrot fly is more injurious in dry seasons, when the growth of the roots is not so luxuriant and rapid as when moisture is plentiful and the rain closes the soil, which in some degree may hinder the fly from laying eggs, as it is said that the female fly goes below the earth for this purpose.

Carrots badly attacked by this insect have deep cracks in the roots in which the larvæ are found. These frequently extend to the centre of the roots and cause them to rot. The tops become brown and wither away, and in the early stages of this attack, when as yet there are only a few larvæ in the roots, the foliage changes and betrays their presence. When these indications are noticed it will be generally found upon pulling up the roots that larvæ are protruding from the holes in them (Fig. 4). In bad cases of this infestation, decay is frequently hastened by the

attacks of millepedes attracted by the unhealthy state of the roots and by slugs and "pea-bugs," *Oniscus*. The larvæ of the carrot fly often remain in the roots after these have been stored and continue to injure them for some time.

The carrot fly is well known in Germany. Kühn says it causes the most common disorder of carrots termed "worm-rot" (*Wurmfäule*) and the "iron mould" affection. It is also occasionally troublesome in France and in other European countries. Recently it has been noticed in Canada. Schiner states that it infests rape and turnips, and that the flies may be found in numbers in the early spring on the lower branches of bushes and trees in damp situations.

### *Life History.*

The carrot fly is shiny black in colour and about the fifth of an inch long, with a wing expanse of nearly half an inch. The wings are iridescent, having dark yellow veins. The head is round, of a reddish yellow colour and very sparingly covered with hairs. The legs are of a light ochreous colour. There is not much difference between the male and female, except that the body of the latter is more pointed than that of the male, and is furnished with a long retractile egg depositor.

In the early spring the flies appear, and may be seen upon the lower leaves of trees and bushes especially near brooks and streams. When the carrot roots are well established the flies lay eggs upon them just below the ground. All authorities agree that the eggs are laid below the surface of the ground, but none have actually observed how deeply the fly goes down for this purpose. It is believed that it is only just below the surface, and that the larva when hatched goes down instinctively to the lower part of the carrot, as the root is softer there and more easily penetrated. When it has gained a footing the larva works upwards and makes passages, with frequent holes to the outside. The larva is without legs, yellowish white in colour, like parchment, as Bouché says, and nearly a quarter of an inch long. It has no distinct head, but its fore end tapers to a point, in which there are two claw-formed hooks for biting and boring. Before pupating it leaves the root, and, going into the earth, assumes a pupa case of a light brown colour with many wrinkled folds. At the tail end two small black points are seen. The head end is very sloping.

There are several generations during the summer. Kühn states that the series of changes is accomplished in between three and four weeks. The pupæ of the last generations remain in the earth, and occasionally in the roots, during the winter, and the flies come forth in the first spring days.

### *Methods of Prevention and Remedies.*

When it is noticed that the tops of carrots change colour prematurely and become rusty, the roots should be examined,

and those that are infested must be forked up so that no part of them is left in the ground, and destroyed. This will prevent further infestation.

If the flies are seen near or on the carrots, the plants should be sprinkled with paraffin emulsion, made by mixing paraffin and soft soap together, in the proportion of one gallon of paraffin and a quarter of a pound of soft soap to 10 gallons of water. The soft soap must be dissolved in a gallon of hot water and paraffin added and thoroughly incorporated by means of a hand pump or syringe, and the proper quantity of water added to dilute it. This emulsion can be put on by means of a knapsack machine, or in large fields of carrots by a horse distributor.

In places where these flies cause injury, ashes, sawdust, sand, or wood-ashes, or peat-moss well trituated and saturated with paraffin oil at the rate of from three to four quarts per cwt. may be put into the drills with the seed. Curtis recommends a gallon of spirit of tar to a barrowful of sand for this purpose. It is stated that pressing the earth close round the root stems may prevent the flies from egg laying. This may be done immediately after the plants are singled by men or boys treading both sides of the rows, and in fields where carrots are grown on a large scale, and the seed is broadcasted, a light roller may be used for this purpose.

Sand or ashes saturated with paraffin, or carbolic acid, may be scattered over the plants at singling time to keep the flies from them. The great object must be to prevent the flies from laying eggs on the carrots, and for this purpose offensive substances, such as soot and earth, ashes or sand, sprinkled with carbolic acid, might be applied as soon as the plants are well established.

After an infested carrot crop has been removed, the land should be trenched in gardens, and very deeply ploughed in fields. Or a good dressing of gas lime should be applied before the land is dug or ploughed in the ordinary way.

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## GENERAL AGRICULTURAL NOTES.

## AGRICULTURAL HIRINGS IN SCOTLAND IN 1896.

According to the *Labour Gazette*, the rates of wages agreed upon at the various hiring markets, held in Scotland between August and December 1896, were generally the same as at the corresponding markets in 1895. Information has been received by the Labour Department of the Board of Trade of the rates of wages paid at 45 hiring markets. In a number of instances it is reported that employers strove to effect a slight reduction in wages, but in almost all cases where farm servants remained on in their old places the old rates of wages were obtained, though in some instances, in the case of those changing their situations, farmers succeeded in bringing about a reduction of from 10s. to 20s. for the half-year. In most districts women servants were scarce, and, on the whole, their wages tended in an upward direction.

At the yearly hirings in Fifeshire, at Cupar, Dunfermline, and St. Andrews, there was scarcely any change in the rates of wages compared with those obtained at the corresponding markets in 1895. The wages of first and second horsemen for the year generally ranged from 26*l.* to 33*l.*, and those of third horsemen from 24*l.* to 29*l.* At the yearly hirings in Perthshire, at Alyth, Blairgowrie, Crieff, and Perth, a good many ploughmen changing their places had to submit to a reduction of 1*l.*, or sometimes a little more, for the half-year. In the county of Kinross a good many farmers hire at the Fifeshire markets in October, and the rates paid in the county are generally about the same as those paid in Fifeshire. In the counties of Aberdeen, Banff, Dumfries, Elgin, Forfar, Kincardine, Lanark, Nairn, and Stirling, the wages at the half-yearly hirings generally varied, in the case of first and second horsemen, from 12*l.* to 16*l.* for the half-year.

In addition to the rates of yearly and half-yearly wages quoted, married men get a free house, together with a small garden in some cases; also allowances of milk, oatmeal and potatoes, and coals free, or carted free. Unmarried men are lodged and boarded in the farm houses, or else lodged in bothies or with married servants, and given allowances of food.

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THE MALTING AND SEED BARLEY COMPETITION OF 1896.

The Board of Agriculture have received a copy of the report of the judges at the Special Competition of Malting and Seed Barleys held in connection with the Brewers' Exhibition in October last.

Several features of this report present points of interest to the growers of barley to which attention may be usefully drawn, with a view to the further investigation of the conclusions suggested by an examination of the samples entered for the competition of 1896.

Compared with the exhibits of the four preceding years, the proportion of native and foreign samples shown is reported to have varied as follows:—

Samples of Barley.	1892.	1893.	1894.	1895.	1896.
British - - - -	64	63	124	109	169
Foreign - - - -	22	21	80	42	32

An exhibit of 50 samples of barley, specially prepared by the Danish Royal Agricultural Society, was also shown in 1896, but not put in for competition.

The decline in competitive foreign entries is ascribed in the report to the failure of the barley crop in almost all countries from which malting barleys have hitherto been shown.

As many as 30 English counties were represented by the exhibits, six contributing eight or more samples, and six counties gained three or more prizes. The character of the past season was reflected in the quality of the samples shown, and the judges report an increase in the weight per bushel of the barley exhibited in 1896, the highest weight of the English samples shown was 61·1 lbs. and the lowest 55·5 lbs., as compared with a range of from 52·3 lbs. to 60·0 lbs. in 1895. Of 162 English samples weighed, 137 scaled between 57 lbs. and 60 lbs. per bushel. The weight per bushel of the foreign samples ranged from 48·7 to 60·0 lbs.

The judges recur to the question of early sowing. The results of the past favourable season confirm the conclusion derived from former competitions as to the advantage of getting the barley in as soon as the condition of the land permits. No prize fell on this occasion to any corn sown after the first week in April.

The character of the soils upon which the sample barleys were grown, and the number produced on light and heavy soils respectively is shown in each of the past three years as follows:—

Year.	Light Soils.		Heavy Soils.	
	Entries.	Prize Winners.	Entries.	Prize Winners.
1894 - - -	91	18	28	2
1895 - - -	90	26	16	7
1896 - - -	119	34	47	16

The influence of soil on the crop is much modified by the character of the season, and it will be remembered that 1894 was cold and wet, and 1895 and 1896 hot and dry.

The judges further divide the entries of 1896 into those from soils of a calcareous and non-calcareous character. The number of entries and prize winners classified in this way are shown below :—

Soil.	Calcareous.		Non-Calcareous.		Total Entries.	Total Prizes.
	Entries.	Prizes.	Entries.	Prizes.		
Gravel - - -	15	6	32	8	47	14
Sand - - -	1	—	18	5	19	5
Chalk - - -	29	11	—	—	29	11
Loam (light) -	2	—	22	4	24	4
„ (heavy) -	5	1	15	8	20	9
Clay - - -	17	4	10	3	27	7
Not defined -	—	—	—	—	3	—
Total - - -	69	22	97	28	169	50

The per-centage of prize-winning exhibits was 31·9 in the samples from calcareous soils, and 28·9 in those from non-calcareous soils. Reviewing these figures the judges state that considering the popular opinion on the question of the effect of calcareous and non-calcareous soils, the slight difference of per-centage indicated by the above results is regarded as remarkable, and the results of further competitions should be of interest on this point.

A record of the nature of the preceding crop having been obtained in the case of each exhibit of barley in 1896, an analysis makes manifest the growing popularity of making the barley crop succeed another white straw crop; and “the desirability of such rotation,” the judges say, “seems to be made quite evident by the awards given to nearly all barley so produced.”

In conclusion, the judges point out that the principal difficulty of the year has been made apparent by the exceptional hardness and brittleness of those barleys that were secured early, and did not properly sweat in rick or barn. A certain amount of damage to the grain resulted from setting the threshing machine and hummeller too closely, which would not have been so manifest in other years when the skin is tougher and probably damper; and growers are warned against this defect, since no matter how fine the quality of the barley may be, its ultimate value to brewers is greatly depreciated if the grain is broken or peeled.



## LIVE STOCK IN ARGENTINA.

A census of the live stock in the Argentine Republic was taken in the month of May in the year 1895, and from the results which have been recently published in *La Agricultura*, the following table has been compiled showing the total number of animals enumerated of each description compared with those recorded in the census of 1888 :—

Stock.						1895.	1888.
Horses	-	-	-	-	-	4,447,000	4,262,917
Cattle	-	-	-	-	-	21,702,000	21,963,930
Sheep	-	-	-	-	-	74,380,000	66,701,097
Pigs	-	-	-	-	-	653,000	403,203
Goats	-	-	-	-	-	2,749,000	1,969,765

The figures relating to cattle in 1895 include 1,800,799 milch cows.

Of the 74,000,000 sheep, 18,000,000 are "criollos," a degenerated native breed descended from the Spanish-merino, and 56,000,000 are "mestizos," improved merinos, or merino cross-breeds. The increase of 7,700,000 in sheep since 1888 is accounted for by an augmentation of 14,000,000 in the number of mestizos and a diminution of 6,300,000 in the number of criollos. Nearly 53,000,000 of the sheep enumerated are located in the province of Buenos Ayres, 6,210,000 are in Entre Rios, and 5,300,000 in Pampa Central. The sheep in Santa Fé have decreased by about 1,000,000, but an increase is observable in most of the other provinces of the Republic. The slight decline in the number of horned stock is stated to have taken place mainly in the provinces of Buenos Ayres, Entre Rios, Corrientes, and Cordoba; it has been confined to the inferior class of cattle.

## THE IMPORTS OF FRESH MILK AND CREAM.

Some reference was made last year in this Journal\* to the fluctuations in the imports of fresh milk and cream, and the opinion was expressed that these large supplies would probably prove to be of a temporary character. This appears to be the case, as the imports during 1896 seem to have sunk to comparatively insignificant proportions, amounting only to 22,776 gallons during the year, as against 126,995 gallons in 1895 and 161,633 gallons in 1894. The latter was the first year in which the statistics of this class of dairy produce were distinguished: it was, in fact, the great increase in the imports of this nature which led to their being separately recorded in the year named.

\* Vol. II., p. 449, and Vol. III., p. 212.]

The country whence the greater part of these supplies are derived is Sweden, as has been the case since 1894. Holland, which transmitted over 60,000 gallons in the first three months of 1894, accounted for no more than 660 gallons, while Denmark takes second place with 5,603 gallons against Sweden's 16,047 gallons. The only other receipts during 1896 were 26 gallons from France, 20 from Norway, and 420 gallons (in December) from Victoria.

More interesting, however, than the variations in quantity are the returns of value. No stress can be laid upon their large fluctuations, because the imports of cream, as distinct from milk, are not separately entered in the customs returns. Consignments of high value will thus consist of a large but unascertainable proportion of cream. This has to be borne in mind in considering the average value per gallon recorded in the accompanying table, in which the principal features are the almost unbroken rise in the value of Swedish milk, from which it may be inferred that the tendency in that country is to export a larger proportion of cream. The value of Dutch milk and cream has also risen; on the other hand, there is a great drop in the value of the exports from Denmark, indicating that the Danish exports are now almost all milk, whereas they would originally appear to have been largely cream. Taking all countries together, the inference to be drawn from the rise in the average value seems to be that the smaller quantities received in 1896 contained a larger proportion of cream than in 1894.

*Imports of Fresh Milk and Cream.*

Periods.	Sweden.	Holland.	Denmark.	Other Countries.	Total.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
1st half year 1894	- 6,832	61,772	140	296	69,040
2nd " "	- 86,502	5,808	161	122	92,593
1st " 1895	- 104,598	12,596	18	141	117,353
2nd " "	- 6,050	2,347	353	892	9,642
1st " 1896	- 3,183	340	1,462	26	5,011
2nd " "	- 12,864	320	4,141	440	17,765

*Value per Gallon.*

	s. d.	s. d.	s. d.	s. d.	s. d.
1st half year 1894	- 3 9	0 10	6 9	1 1	1 1
2nd " "	- 3 11	1 4	5 1	3 5	3 10
1st " 1895	- 3 4	0 9	7 9	4 5	3 1
2nd " "	- 5 3	2 2	2 0	4 3	4 4
1st " 1896	- 5 11	2 0	1 11	4 7	4 6
2nd " "	- 6 4	1 10	0 10	3 0	4 11

## CULTIVATION OF CEREALS IN URUGUAY.

The *Anuario estadístico* of Uruguay contains some information relating to the progress of cereal cultivation in that country, from which it appears that wheat and maize are the only important crops. In 1894 the area under the former cereal amounted to 504,000 acres, as compared with 511,000 acres and 393,000 acres respectively in the two preceding years, and the production was estimated at 8,640,500 bushels against 5,527,500 bushels in 1893 and 3,192,750 bushels in 1892. These estimates represent a yield per acre of 17, 10·8, and 8·1 bushels respectively. The extent of the land under maize is considerably below the wheat acreage; in 1894 it was 311,000 acres, and the production was calculated to have amounted to 5,093,000 bushels.

Oats, barley, and beans are grown, but they occupy a small and diminishing area, and the surface devoted to potatoes and linseed is likewise a decreasing quantity.

On the whole, agriculture has made far less progress in Uruguay than in the neighbouring republic of Argentina, and this is to be largely accounted for by the natural characteristics of the former country being less favourable to farming pursuits. In contrast with the level plains and gentle undulations in the wheat-growing provinces west of the La Plata, the land in Uruguay may be almost described as hilly. Only in the valleys and along the course of the rivers is the soil of a suitable depth for arable farming. On the hills, and even on the slopes of slight elevations, rocks are found close to the surface rendering cultivation impracticable in many localities, and soil is seldom met with in the Republic of sufficient depth for the profitable growth of lucerne.

The exports of wheat from Uruguay are of small dimensions, the largest quantity exported in a single year having been 4,068,327 bushels in 1894; prior to that year the exports had never exceeded 670,493 bushels; in 1895 they amounted to 1,761,290 bushels. There is a small exportation of wheat flour.

The chief wheat-growing provinces are the districts of Canelones, Colonia, and San José, bordering on the La Plata, and the more northerly provinces of Soriano, Paysandu, and Florida.

Evidence of the comparatively stationary condition of agriculture is to be found in the estimate of the number of farmers, labourers, ploughs, and draught oxen in the country in each of the three years 1892–94. These are shown as follows:—

—					1892.	1893.	1894.
					No.	No.	No.
Farmers	-	-	-	-	21,324	22,238	21,045
Labourers	-	-	-	-	37,762	44,964	40,751
Ploughs	-	-	-	-	35,801	40,412	36,497
Draught oxen	-	-	-	-	105,495	117,619	113,160



The estimated decline in the number of ploughs has been explained by the fact that a number of emigrants from Uruguay to the neighbouring republic of Argentina have carried their implements with them.

In Uruguay, as in Argentina, agriculture is for the most part carried on by foreign settlers and their children. The greater number of the immigrants into the former country are Italians, Spaniards ranking next. The oldest agriculturists in Uruguay are Spaniards, who emigrated from the Canary Islands about 30 years ago.

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#### FORESTRY IN SWEDEN.

The area covered by the forests of Sweden, according to the returns of 1894, amounted to 46,663,000 acres, or about 45 per cent. of the total land area of the kingdom. Of this about 14,300,000 acres belong to the Crown. These are valued at 2,831,000*l.*, and in 1888 yielded a net income of 70,000*l.* The royal timber preserves are stated in a report on the subject issued by the United States Department of Agriculture, to be managed with scrupulous care. The whole country is divided into forest districts, and these in turn into "revir." Each district is under the supervision of a chief forest inspector, and each "revir" is guarded by a forest ranger and a number of underkeepers. The Crown forests are managed on the principle that the increase alone may be cut, and that [the forest itself—the capital stock, so to speak—shall stand for ever on all Crown lands unsuitable for cultivation. Furthermore, the Government has entered upon an extensive and practical system of planting forests upon desolate and uncultivated areas. These official measures have also had a marked effect upon the owners of private forests, especially upon the larger proprietors, many of whom are now managing their timber lands as permanent sources of income.

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#### FORESTRY IN NORWAY.

The Foreign Markets section of the United States Department of Agriculture has recently published some information regarding the condition of forests in Norway. The forests owned by the State and Local Authorities are estimated to cover an area of 2,500,000 acres. Since 1866 the Government has bought about 91,400 acres of woodland in different sections of the country, but the aggregate forest land of Norway is supposed to have diminished in an equal ratio during that period by the destruction of private woods. The value of public and communal forests is estimated at about 800,000*l.*, and they occupy

only  $12\frac{1}{2}$  per cent. of the aggregate forest area of the country, which may be computed at nearly 20,000,000 acres. In Sweden the public forests amount to 16 per cent. of the total forest land; in Bavaria to 51 per cent.; in Baden to 70 per cent.; in Prussia to 68 per cent.; and in France to  $35\frac{1}{2}$  per cent.

In 1874 a Royal Commission was appointed to examine the condition of private forests and the general wood supply of Norway. In the report of this body it was estimated that the five southern "stifts," or provinces, of Norway, which together embrace about 17,000,000 acres, consumed 401,000,000 cubic feet of wood in 1875, while the reproduction did not exceed 293,000,000 cubic feet, which gave a year's deficit of 108,000,000 cubic feet. Forty years earlier forestry statistics recorded a fair surplus of production over consumption, and in 1855 there was nearly a balance. The Commissioners stated that the yearly loss, already so large, must increase every year. Extensive purchases of private forests by the Government were recommended, although great results were not expected from the adoption of this measure. The spread of knowledge on rational forestry can, it is thought, have but a limited influence, although the Government has established a few forestry schools in different parts of the country. It is held that the only means of protection now remaining is the introduction of legislation restricting the disposal of forest property by the private owners, and forbidding the destruction of young forest trees. Such legislation already exists in France, Italy, Germany, and Switzerland, and to a certain extent in Sweden. Its adoption in Norway was proposed by the Government in 1882, but since then little progress has apparently been made in the matter, public opinion being hostile to the proposed restriction.

Norwegian forests have lately suffered the loss of many young trees of small dimensions, cut down either for exportation or for pulp manufacture. The so-called cellulose wood, prepared from small trees, and cut very short to escape the export duty on wood, is at present in great demand in foreign markets.

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#### DAIRYING IN NEBRASKA AND THE DAKOTAS.

In a bulletin lately published by the United States Department of Agriculture it is stated that the dairy industry in Nebraska, South Dakota, and North Dakota is a comparatively new industry; but that agencies have already been created for assisting in the development and improvement of dairying, and each of the three States has its organisation for joint effort by those engaged in this branch of farming.

In Nebraska dairy farming has been well established in the eastern half of the State, and especially in the south-eastern

portion; it is also carried on in southern counties of the State almost as far as the eastern boundary of Colorado. There are, however, comparatively few farmers as yet who really make a specialty of this branch of agriculture. It seems that the majority milk only three or four cows, or half-a-dozen at the most, and if they do not sell milk or cream their surplus butter generally goes to the local storekeepers, and finds its way usually to the "*ladlers*" (see p. 402) or dealers in promiscuous butter. An improvement is reported to have taken place in the quality of farm dairy butter made in the State during the past ten years.

In South Dakota the conditions are much the same as in Nebraska, and dairying has been developed mainly in the eastern half of the State. There are said to be a few experienced dairymen doing good work, but most of the milk is produced by farmers who each keep a few cows, simply as incidental to their general business.

In North Dakota the usual milking period is seven months, and of these four are passed on pasture. The bulk of the milk is produced during May, June, and July. Butter is largely sold to customers in the neighbourhood or within easy reach, in 5 lb. and 10 lb. jars, at 10*d.* a pound in summer and 1*s.* 0½*d.* in winter, but a considerable quantity is disposed of to the storekeepers at less than 5*d.* a pound, and is shipped out of the State to be "*ladled*."

The data given in the following table afford an approximate estimate of the principal items connected with the dairy interests in these States:—

State.	Milch Cows owned.	Estimated Value of Cows.	Milk produced—Yearly Quantity and Value.				Creameries.	Cheese Factories.
			Average Yield per Cow.	Total Milk produced Annually.	Value of Milk per Cwt.	Total Value of Milk produced Annually.		
Nebraska - - - -	No. 563,313	£ 2,708,000	Lbs. 2,430	Cwt. 13,688,500	<i>s. d.</i> 2 2½	£ 1,511,000	No. 119	No. 2
South Dakota - - -	278,928	1,333,000	2,500	6,973,000	2 6½	886,000	89	2
North Dakota - -	146,328	677,000	2,300	3,365,000	2 3½	386,000	27	6

The most probable cause of error in this table is said to be the low annual milk yield assigned to the cows, but the rates given are sustained by reports of actual facts which appear to be reliable. The figures exhibit the average milch cow of this region to be an animal of very doubtful profit, for in South Dakota, which shows the best results, the gross income per cow in milk would be but 3*l.* 2*s.* 6*d.* a year. Nearly all the creameries in these States are built of wood, with iron chimney stacks.



Cheese-making on the factory plan has not become established to any extent in the three States under consideration. North Dakota seems to have done more than the others, although the aggregate product of Nebraska is larger. It is claimed that in the year 1895 about 1,000,000 lbs. of cheese were made in factories in the latter State and about half as much on farms. In North Dakota the estimate for the same year is 400,000 lbs. for factory cheese, but this is probably in excess of the fact. Nebraska reports show that about  $9\frac{1}{2}$  lbs. of cheese is produced from 100 lbs. of milk, and North Dakota reports show something over 10 lbs.

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### AMERICAN "LADLED" BUTTER.

A Report published by the United States Department of Agriculture on the dairy industry in Nebraska and Dakota contains some interesting information relating to the production of an inferior quality of butter in the United States, which is known in the trade as ladled butter. It appears that the newer dairying districts of the Dakotas and Nebraska produce immense quantities of this class of butter, or that which, after treatment, comes to be thus known, and the largest establishments for handling this material are in the north-west. One or two are located in Nebraska. There are none yet in the Dakotas, and the ladled butter from those States is at present sent to factories in Minnesota and Iowa for renovation, and some of it to Chicago.

In all parts of the country where butter is made by small farmers at their homes, quantities of it are sold to the local storekeepers. The condition of a considerable part of this butter is such that the dealers cannot sell it to their retail customers. These numerous small lots of poor, damaged, and thoroughly bad butter have to be disposed of as grease, or go to establishments which gather large quantities of the material and so manipulate and "renovate" it as to bring it into a merchantable form as food. In the market quotations these products are called "ladles."

The business is carried on as follows: The local storekeepers take butter in exchange for goods. The price allowed to all the producers at any one store is the same, quite regardless of the quality of the butter. As a rule, merchants sell what they can of the best which is received, without any profit or else at an advance of a halfpenny or a penny. The remainder, which in most cases constitutes much the greater part of the receipts, is dumped into receptacles of all kinds, and periodically sent off to the centres for lading. Flour barrels, starch boxes, shoe boxes, and soap boxes have been indiscriminately utilised for this purpose. Much of this so-called butter is of such a character that it makes

little difference how it is neglected. The receptacles are frequently left open, no attention is paid to the mixed contents, and they are not sent away until full, or until the mixture becomes so offensive that it must be got rid of. The one requirement of the package is that it should not leak and waste too much, if the contents should melt to oil in transit. Economical motives alone seem to have led to a reform in this regard, and the ladlers now send out what are called butter-stands to their regular sources of supply, which are despatched to the factory when filled. The ladlers grade the contents as best they can, and make their own returns to the shippers, as to both weight and quality. During the season of 1895, the average price paid by ladlers for consignments from the three States referred to was just about 5*d.* per pound, the consignors paying freight to Omaha, or wherever the factory was located. Freight charges probably averaged a farthing a pound.

Efforts are being made by the ladlers to improve the quality of their product by securing some degree of care in the collection and transportation of the country butter. Merchants are encouraged to hire collectors to get the butter from the farms, uncoloured and unsalted.

The profit of the ladlers lies in intelligent grading and in increasing the weight by salting, washing, and reworking; also, more or less, in the success of the various processes used in eliminating rancidity, and restoring the semblance of grain and flavour to the mass. The article resulting from these processes is called butter and goes into the butter market. As a rule, "ladles" are quoted in the Chicago market at about two-thirds of the price of creamery butter, and at about four-fifths of that of dairy butter of like grade, "extras," "firsts," or "seconds." What is known as "imitation creamery" is, as a rule, nothing but selections from the best of the ladled goods.

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#### FARM MORTGAGES IN THE UNITED STATES.

The annual report of the Secretary of Agriculture of the United States for 1896 contains some interesting information relating to the mortgage indebtedness of farmers in the several States of the North American Union.

It seems that out of each thousand farms in the United States only 282 are mortgaged, and three-fourths of the money represented by the mortgages upon them was for the purchase of such farms, or for the execution of improvements. Seventy-two of every hundred farms are absolutely free from mortgages or other encumbrances, and it is estimated that the debts secured by liens upon lands used for tillage and the production of crops amount in the aggregate, after throwing out the mortgage debts of railroads and other corporations, to less than one-sixth of

the total indebtedness of the citizens of the United States secured upon real estate.

The idea that the farms in the western and the southern States are more heavily burdened with mortgages than those in the eastern and northern sections of the country appears to be an erroneous one. The States along the North Atlantic shores are reported to be quite heavily encumbered with farm mortgages, and New Jersey is said to carry a debt of this kind greater in proportion to its farm valuations than that of any other State in the Union.

The rate of interest charged on mortgages upon residential property, other than farms, averages throughout the United States 0·84 per cent. less than the rate of interest charged upon farm loans. In seventeen States the average rate charged on the latter class of loans is less than that demanded for loans on residential property. In two States the rates are the same upon urban and rural real estate; in eleven the rates of interest are less upon money secured by farm mortgages than upon loans secured by other realty in those States; and in five States, including Kansas, the difference in favour of the farmer is from one-fourth to one-half of 1 per cent. per annum, but in Texas it is over 1 per cent. In this connexion it is pointed out that if the farmers in the west pay a somewhat higher rate of interest than those in the east, persons engaged in other industries in the western States also have to pay a heavier rate on loans than individuals in similar industries located nearer the money centres.

During the last ten years there is reported to have been a steady maintenance of land values in nearly all sections of the western States, and in some the price of land is said to have risen.

It is held that between 1880 and 1890 the increase in farming-land values, as reported by the occupiers of the farms, was greater than the entire interest charge for the decade in most of the great agricultural States of the west and south.

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#### EFFECT OF THE AMERICAN HOMESTEAD ACT.

The United States Secretary of Agriculture, in his last Report, calls attention to the fact that during the past 30 years nearly 2,000,000 farms of 80 acres each in the United States have been given away by the Government under the Homestead Law of 1866, and that under the Timber-Culture Law the area of land allotted was equivalent to over 550,000 more farms of the same size. In this statement no account is taken of the desert land laws, under which numerous allotments of land were made gratuitously, nor does it include the large area of land patented to States and corporations, and sold at nominal prices



With regard to the effect of the Homestead Law it is maintained that no legislation relative to the public domain has been so directly inimical to the farmers who had bought and paid for the lands upon which they lived and laboured. Until this law came into operation in 1866 occupiers of land in the United States competed with each other upon land representing accumulated capital and fixed investments, but when the vast areas of fertility allotted under the legislation of 1866 began to produce crops the value of land in the Eastern and Middle States of the Union declined. Farmers in the older States found it impossible to profitably dispose of their products in the face of the competition of the produce from farms, which cost their owners nothing, in the newly settled States.

### FARM ANIMALS IN THE UNITED STATES.

According to the telegraphic summary of a report by the United States Department of Agriculture the number of domestic animals on farms and ranches in the United States in January 1897, contrasted as follows with those of the previous year:—

Animals.	Number.		Decrease. Per Cent.
	January 1897.	January 1896.	
Horses - - - -	14,435,000	15,124,000	5.0
Mules - - - -	2,216,000	2,279,000	2.3
Milch-cows - - -	15,942,000	16,138,000	1.0
Oxen and other cattle - -	30,508,000	32,085,000	4.9
Sheep - - - -	36,819,000	38,299,000	3.9
Swine - - - -	40,600,000	42,843,000	5.2

It will be observed that, comparing the figures for 1897 with those for 1896, there is a decrease of about 1,500,000 both in the case of oxen and other cattle, and of sheep, and of over 2,000,000 in swine. The oxen in the United States have now declined continuously from 36,600,000 in 1894, and sheep from 47,300,000 in 1893; while in swine the fall set in after a maximum of 52,400,000 in 1892.

The total value of all animals is estimated at 344,354,000*l.*, against 359,985,000*l.*, a decrease in round numbers of 15,600,000*l.*, or 4 per cent., although the value per head of cattle and sheep is computed to be greater than in 1896. This decrease in the total value has now been steadily progressing since 1893, when the total was 517,397,000*l.*, or over 173,000,000*l.* more than now.

## THE FRENCH CENSUS OF 1896.

The preliminary results of the census which was taken in France on the 29th March 1896 were officially published on the 31st December last, and although the statistics now available do not contain the detailed information which is to be issued hereafter, there is sufficient evidence to show that rural depopulation has not been arrested in France during the interval since the census taken five years previously.

The total population of France enumerated at the census of 1896 amounted to 38,517,975, showing an increase of 175,027 persons since 1891, and of 299,072 since 1886. In 1896 there was an increase of population in 24 departments, and a decrease in the other 63 departments; but despite the diminution of inhabitants in nearly three-quarters of the total number of the departments, the total population of France, on account of the increase in the urban population, showed a slight increase, as above stated. The total population of all the towns and cities in France containing more than 30,000 inhabitants rose from 6,996,331 in 1891 to 7,323,340 in 1896, showing an increase of 327,009, a figure which is itself nearly twice as great as the net increase in the population of the whole country during the same period. The increase in the urban population, as above stated, is nevertheless inferior to that which occurred during the previous quinquennial period, when it amounted to 362,444 persons, although the number of towns with a population exceeding 30,000 inhabitants was smaller by four in 1891 than in 1896.

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## KILN-DRYING OF CORN IN FINLAND.

The *Mitteilungen der Deutschen Landwirtschafts Gesellschaft* of the 5th October 1896 contains a note on the method of drying corn in Finland. It is stated that harvesting in that country is not a simple matter, for when the straw, while yet on the field, becomes dry enough to allow of its being brought in, the grain is by no means in an equally satisfactory condition, since the latter never dries naturally in those latitudes. In former times, when threshing was distributed over the whole year and the work was gradually completed, the quantity to be threshed was first taken to the drying house, and there completely dried by artificially heated air. Threshing was then an easy task, nothing remained in the ear, and the Hamburg merchant was always eager to obtain this dried commodity, for it gave him no trouble in his storehouse, even if it remained there for years. But the travelling threshing machines have now brought about a change in Finland as elsewhere. The object now being to get the corn to market as quickly as possible, it is put through the machines while still wet (only the straw being dry), and the grain only is then passed through a kiln similar to that used for malt. This

process, it is stated, has turned out to be by no means so effective as the old method; for the drying, on account of the heaped up masses, is unequal. The merchant is fully aware of this, and no longer pays a higher price for such corn as he did formerly. Besides which, the threshings are less satisfactory, as the smaller grains, being wet, remain in the ears.

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#### CO-OPERATION IN MARKETING FRUIT IN NEW ZEALAND.

A conference of Australian fruit-growers was held last year at Wellington, New Zealand, and the report of the proceedings contains interesting information on the progress of co-operation in that Colony. Co-operation amongst fruit-growers in New Zealand is by no means a new thing, numerous co-operative associations having sprung up from time to time, although nearly all have failed to carry out successfully the objects for which they were started. Particulars are, however, given in the report referred to of a successful association which commenced operations in the season 1891-92. After working for two seasons the members registered the association as a public company in order to obtain a legal status. Only fruit-growers are eligible as shareholders, and no grower is allowed to take up shares to the extent of more than 10 per cent. of the value of his largest crop of fruit in any one year. By this means every grower contributes to the company an amount equivalent to his interest in the fruit-growing industry. Moreover, no fruit-grower is permitted to hold shares unless he first signs an agreement to sell to the company (at such price as shall from week to week be fixed by the general manager of the company) the whole of his fruit, which is consigned to any part of New Zealand north of Milton. Such growers as do not agree to become shareholders can still sell their fruit to the company.

The company's agreement with growers provides that each shareholder must keep his orchard clean to the satisfaction of the directors of the company, and power is given to the directors to have this work done at the expense of any grower who neglects or refuses to do it when called upon. It is further provided that the company shall annually appoint some fit and proper person to inspect the orchards belonging to the fruit-growers.

The growers depute one of their number to be continually in the manager's stores with access to all the books and papers relating to the association, so that growers may be thoroughly acquainted with everything that affects their interests.

All the shareholders are bound to sell their fruit to the association at such prices as are fixed by the manager, the following system being followed:—Every night, after the day's fruit is sold, the manager confers with the growers' representative as to the prices to be paid to growers for fruit during the



next day, prices realised to date having been carefully analysed, and all outside agents communicated with by wire. After coming to a decision, the prices are wired early on the following morning to the growers, and these prices hold good for all fruit received into store on that day, no matter what the produce may subsequently realise. The price paid to the growers varies according to the grade of the fruit, and each member of the association is supplied with a printed grading card.

All fruit is first graded by the grower, and this grading is checked by the manager, with the growers' representative as umpire. Immediately on receipt of the fruit at the store a number of men set to work to open all the cases, which are brought to the grading-table in front of the manager in such a manner that he cannot possibly see to whom the fruit belongs. He then decides its grade, the decision being final unless the growers' representative differs from it, in which event the matter is discussed and always amicably settled. The fruit is afterwards weighed by the manager and the weight credited to the growers' account at the price ruling for that grade. The fruit then becomes the property of the company, on whose account it is sold. In disposing of it the officials are guided by the demand from the various outlets, always fixing local reserve prices according to prices ruling elsewhere. Thus, if Wellington quotes 3*d.*, and Christchurch 3½*d.*, the local sales and shipments are regulated accordingly. Daily, at 3 p.m., a sale is held for the trade only, when all fruit, except such as is reserved for shipment, is offered, and any not reaching the reserve price is kept back for the public sale which takes place daily at 5 p.m. The result of practically all the fruit going to one store is at once seen. Buyers must go to the seller instead of, as in the past, being run after by the grower, and competition amongst the buyers has resulted in fair prices. Nor is this the only good result of co-operation: cases, which were in the past always given to the buyer, have, since the inception of the association, been charged for—this item alone amounting to a considerable sum annually. Claims against growers, moreover, which were a serious item in the past, are now said to be quite unknown, freights have been materially reduced, and satisfactory arrangements with the outside markets have been made.

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## FOREIGN OFFICE REPORTS.

## WHEAT PRODUCTION AND TRADE IN SPAIN.

The Board of Agriculture have received through the Foreign Office a copy of a report issued last year by the Spanish Customs Department upon the production and trade in wheat in Spain, together with a summary of the report drawn up by Sir George Bonham, Bart., Secretary of Her Majesty's Embassy at Madrid.

The inquiry was instituted in consequence of the drought which prevailed in Spain during the early part of last year, when it was feared that there might be a failure of the crops. This contingency fortunately did not arise, but the statistical information obtained was embodied in a report from which the following information concerning the production, consumption, and trade in wheat is taken.

The production of this cereal during the six years 1890 to 1895 is stated to have been as follows :—

Year.				Bushels.
1890	-	-	-	73,755,000
1891	-	-	-	68,871,000
1892	-	-	-	72,375,000
1893	-	-	-	83,925,000
1894	-	-	-	106,232,000
Average 1890-94				81,032,000
1895	-	-	-	78,737,000

The amount produced in the different provinces varies very considerably. Unfortunately no statistics as to the area cultivated are available, so that it is impossible to say what is the average yield.

It appears that the statistics forming the basis of the report have been furnished by various Government departments, and the information supplied thus sometimes covers the same ground. The results do not always agree, and the conclusion is drawn that there are not in Spain any statistics even approximately correct relating to the production of wheat. There is, further, every indication that the actual production is considerably higher than that officially given. One cause assigned as a reason for the understatement of the production is that the land tax being based entirely on produce, the inducement to make false returns is very great. It thus appears that the

statistics of imports and exports are the only ones on which much reliance can be placed.

The imports of wheat during the five years 1890-94 were as follows :—

Year.				Bushels.
1890	-	-	-	5,925,000
1891	-	-	-	5,697,000
1892	-	-	-	5,099,000
1893	-	-	-	15,380,000
1894	-	-	-	15,645,000
Average				9,549,000

The imports of flour during the same period were small, the average being but 193,000 cwts., and they diminished after 1891 ; this is attributed to increased duties. The present duties on flour and wheat (7s. per cwt. and 2s. 3*d.* per bushel respectively) are such as to favour the importation of this food stuff in the form of grain rather than as flour, and it is pointed out that under this arrangement the native millowners have a complete command of the market. It will be noted that the fluctuations in the imports of wheat do not correspond to those in the production, but the amount obtained from abroad is very small compared with the native supply, being under 12 per cent.

The exports of wheat are small, averaging but 12,000 bushels per annum during the five years 1890-94, but it is supposed that smuggling prevails to a considerable extent, notably across the Portuguese frontier. Exports of flour, however, averaged 331,000 cwts., corresponding to 885,000 bushels of wheat.

So far as the external trade in wheat is concerned, the chief ports of entry appear to be Barcelona, Tarragona, Valencia, and Alicante ; while three-fourths of the wheat and flour exported goes *viâ* Santander, and practically the whole of the remainder from Barcelona.

Statistics of the coasting trade are also given : about 5,500,000 bushels being thus annually conveyed from one part of the kingdom to another, mostly along the Mediterranean coast.

An attempt has further been made to estimate the internal trade between the various provinces, but as the canal and road traffic has not been taken into account, much reliance cannot be placed upon the results. The provinces exporting most wheat (by rail) to other parts of the kingdom are Valladolid, Valencia, and Palencia, while the chief importing provinces are Barcelona, Alicante, and Madrid.

The statistics of consumption are obtained by striking a balance between the production and the imports on the one hand, and the amounts required for seed and export on the other. The results are, however, given with great reserve, owing principally to the uncertainty of the figures relating to



production and seed-corn (the latter is estimated at one-seventh of the production). It will be noticed also that the amounts sent and received by rail, and in the coasting trade, also differ slightly. The calculation is as follows (the figures all being averages of the years 1890-94):—

	Annual Average Quantity in Bushels.
Wheat produced - - - -	81,032,000
„ imported, including flour - -	10,067,000
„ introduced by coasting trade -	5,334,000
„ „ „ rail - - -	43,797,000
	<hr/> 140,230,000
Seed corn - - - -	11,576,000
Wheat exported, including flour - -	897,000
„ sent by coasting trade - -	5,422,000
„ „ rail - - -	44,844,000
	<hr/> 62,739,000
Total available for consumption -	<hr/> 77,491,000

The amount consumed, therefore, per head of the population, according to the latest census, that of 1887, works out to  $4\frac{1}{2}$  bushels. By means of the same data estimates of the consumption in the provinces are also given, and these appear to vary very considerably in different districts; but there are several considerations to be taken into account, such as the absence of an inquiry into the transport of wheat by road and canal, the principal one, however, being that the statistics are faulty.

#### AGRICULTURE IN FRANCE.

The Board of Agriculture have recently received from the Foreign Office the Report drawn up by the Budget Committee upon the French Agricultural Estimates for 1897, together with memoranda by Mr. Austin Lee on these estimates and on the debate in the Chamber of Deputies upon this section of the Budget. The Report contains an interesting summary of the progress of certain branches of agriculture in France, and the following information is taken from the documents referred to.

The Report states that the value of agricultural land in France exceeds 3,200,000,000*l.* the working capital being 340,000,000*l.*, the value of the produce exceeding 540,000,000*l.*, and the amount of wages paid to the labouring classes reaching 160,000,000*l.*

The separate farms (*exploitations*) in France amount to 5,672,000, of which only 217 are of more than 1,235 acres, 28,000 range from 247 to 1,235 acres, 56,000 from 124 to 247

acres, 783,000 from 25 to 124 acres, the remaining 4,800,000 being under 25 acres in extent.\*

France is thus essentially a country of *petite culture*, agriculture occupying a large number of persons with small capitals. There are in this industry as many masters as *employés*, the former being reckoned at 3,460,000, whilst of the latter there are 3,453,000, including day labourers and farm servants. Of the masters, 2,150,000 own the land they cultivate; 968,000 are tenants, 500,000 of these owning a portion of their farms; while the *métayers* are reckoned at 240,000, of whom 147,000 own plots of land. Further, of the 1,480,000 day labourers receiving wages, 727,000 also own small plots, so that 3,525,000, or more than half the whole number working the soil, are owners of land.

The Report attributes to the Republic of 1848 the credit of being the first to promote seriously the interests of agriculture by organising agricultural credit and founding the *Crédit foncier*, while the creation of a Ministry of Agriculture was due to Gambetta. The sums voted for certain branches of agricultural expenditure in the budgets at various dates have been as follows:—

Credits voted.	1800.	1829.	1845.	1869.	1896.
	£	£	£	£	£
Agricultural education -	1,400	1,200	5,940	55,752	152,870
Encouragement to agriculture -	19,490	4,800	27,199	80,198	401,908†
Veterinary schools and services	13,204	9,368	24,038	26,244	63,078
Horse-breeding establishments ( <i>haras</i> ).	15,038	71,247	96,175	81,564	294,222
Total -	49,132	86,615	153,352	243,758	912,078

† Includes annual premiums (280,000*l.*) during six years for sericulture and cultivation of flax and hemp.

Reviewing the development of agricultural production in France, the Report states that the average area under wheat during the last ten years of the Empire was 17,012,619 acres, while in 1892-95 it was 17,286,789 acres; the land under this cereal had thus more than recovered the loss sustained by the separation of Alsace-Lorraine. The average production during the first period amounted to 270,432,000 bushels (16 bushels per acre), whilst in 1892-96 the yield had increased to 308,899,000 bushels (about 17½ bushels to the acre).

The production of oats has likewise increased, and the production of potatoes is greater by 132,000,000 bushels. The development of the cultivation of forage crops has been equally important.

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\* These figures are those returned in the Decennial Agricultural Inquiry of 1882, published in 1887. The results of the inquiry of 1892 are not yet published.

As regards live stock, both cattle and swine have increased; the former from 12,733,000 head (including 443,000 in Alsace-Lorraine) prior to 1870, to 13,218,000 in 1896, and the latter from 5,377,000 in 1872 to 6,304,000. Sheep, on the other hand, declined from 33,000,000 in 1850 to 24,000,000 in 1870, and to 20,000,000 in 1896. This decrease, attributed to better cultivation and the tillage of waste lands, &c., has nevertheless been accompanied by an increase in the production of mutton, which was estimated at 207,000,000 lbs. prior to 1870, and at 235,000,000 in 1882, while it is calculated that this rate of increase has since been maintained. The total production of meat of all kinds is given at about 2,010,000,000 lbs. before 1870, and about 2,550,000,000 lbs. at the present day. The production of milk during the same period has grown from 1,496,000,000 to 1,672,000,000 gallons.

Various speakers in the debate on the Agricultural Estimates in the Chamber of Deputies appear to have contended, however, that the tone of the Report summarised above was too optimistic, and that agriculture was in as depressed a condition in France as elsewhere, while its situation, far from improving, was growing worse, and the people were leaving the rural districts for the towns. Amongst other factors alleged to exercise an injurious effect upon this industry were the heavy taxation of farmers, the absence of legislation to prevent fraud in the sale of butter, the local duties (*octrois*) imposed upon produce in towns, speculation in grain, want of a market for pigs, as well as outside influences such as foreign competition and the fall in the price of wheat. It was also pointed out that the railway rates facilitated the importation of foreign wheat at Marseilles. As remedies, speakers suggested, among other things, further increased duties on imported grain, the revision of "temporary admissions," and the adoption of the German system in force for the encouragement of the milling and other industries, the marking of foreign meat, protection of French cattle from the introduction of disease from Holland, and the extension of agricultural credit and insurance.

M. Méline, President of the Council and Minister of Agriculture, in replying admitted that agriculture was really suffering, owing to the continuous fall in prices of late years and the lower rate of exchange, which had rendered the customs duties partly inoperative at the present moment to protect national produce; but he pointed out that the duties were still sufficiently effective to prevent French agriculture being placed in so serious a position as that of many neighbouring countries. He was personally in favour of bi-metallism as a remedy, but that was a question which could not be discussed then. M. Méline agreed as to the injury caused by speculation, but did not see how it could be remedied without damaging legitimate trade. He also pointed out the disadvantages of bounties. One of the greatest services which could be rendered to agriculture, he said, would be a revision of the present financial system;



land bore far more than its fair share of taxation, and this was the reason which had led him to combat the proposed income-tax, which he maintained would only be effective in the case of land, as the latter was a possession that could not be hidden.

The various items of the estimates were finally passed, without material alterations, as suggested by the Budget Committee, the total sum demanded being 1,661,765*l*.

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### CULTIVATION OF WHEAT IN SOUTH RUSSIA.

According to a report supplied to the Foreign Office by Colonel Stewart, Her Majesty's Consul-General at Odessa, it would appear that even the rich soil of the governments of Southern Russia is unable to go on producing corn crops year after year without manure.

Not only is manure seldom applied, but the peasants declare that it is positively harmful, and that on ground richly manured, especially with horse dung, the crops in the long dry summers are burnt up, and that manuring is only of use in a wet summer, which is unusual in the Odessa district.

Large deposits of phosphate of lime occur in many parts of Russia which would be very valuable manure, but it is little used. There are some exceptions where a more enlightened system prevails, but they are few, and until lately the necessity for deep ploughing and manuring had not made itself felt.

The report, which is dated 23rd November 1896, states that the prices of food grains had risen very much since harvest, and if the prices then existing could have reached the hands of the cultivators they would not be badly off, even with the smaller quantities reaped, but speculators bought up the crops when prices were low, and the peasants and farmers were suffering both from short quantity and from low prices.

Not much grain of the past harvest had been exported from Odessa, firstly, on account of the excessively high freights charged in October when the first grain of the season could have been shipped, and also because the news received of locusts in Argentina, the famine in India, and high prices prevailing for wheat in the United States gave hopes of still higher prices later on.

Freights had been as high as 21*s*. 6*d*. per ton to the United Kingdom, and although they had fallen considerably they were still somewhat higher than usual, averaging about 14*s*. per ton for grain cargoes.

[*Foreign Office Report, Annual Series, No. 1832. Price 1*d*.*]

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## STATE LOANS FOR AGRICULTURAL IMPROVEMENTS IN RUSSIA.

In a Report to the Foreign Office on the Consular District of Batoum, Mr. P. Stevens, Her Majesty's Consul at that port, furnishes the following details relating to a law promulgated in July last, which, it is stated, may prove of great advantage to the agricultural classes :—

The new law has reference to the granting of advances on account of rural economical improvements. The measure has been adopted for three years as a trial. By the decree in question advances are authorised for drainage and irrigation works, for strengthening river banks, for preventing the fall of precipices, for bringing the plains of shifting sands under cultivation, and for developing orchards and vineyards.

The chief grounds on which grants are made are briefly as follows :—

The administration for granting advances is under the control of the Ministry of Agriculture and State Domains (Department of Rural Economy and Rural Economic Statistics), and the decision as to the grants being made rests with the Minister after the question has been considered by the Council of that Ministry. Representatives of the Ministries of Finance and of the Interior take part in the deliberations of the Council with the right to vote.

Advances are granted only on condition that the earning power of the proposed expenditure shall be preliminarily proved, and the work must be executed under Government inspection, with a view to seeing that the loans are really applied to the purposes for which they are granted. Should the improvements carried out by the borrower be of material advantage to a whole district, or should they facilitate or reduce the cost of the execution of similar works on neighbouring State lands, then the Ministry of Agriculture shall transfer a portion of the expenditure to the charge of the special credits of that Ministry.

Loans are granted (*a*) to Zemstvos for drainage, irrigation, or other works which are of general importance for whole governments or districts; (*b*) to individual landowners; and (*c*) to rural communes. Loans to individual landowners and rural communes are granted either direct by the Ministry of Agriculture, or through the intervention of the Zemstvo institutions.

These loans are granted for terms not exceeding 20 years (the period is fixed by the Ministry of Agriculture, by agreement with the Ministry of Finance) for each class of improvement, and for a sum not exceeding three-fourths of the cost of the improvement. Interest is charged at the rate of 4 per cent. per annum, and the loan has to be repaid in annual payments varying in proportion to the length of the term for which the loan is granted.

The loans are guaranteed by the estate on which the improvements are made, or by other real property, or by deposits of State bonds. Estates which bring in no income are not taken into consideration. Real property is only accepted as guarantee for loans up to 75 per cent. of its value. Loans granted to rural communes are guaranteed either by surplus land belonging to the commune (*i.e.*, land over and above the plots allotted to the individual members of the commune), or by a communal bond, by which all the members of the commune mutually guarantee one for the other.

Those who wish to obtain loans must send in an application to the Minister of Agriculture, which has to be accompanied by the following documents, *viz.*, (1) a description of the property on which it is proposed to carry out the improvements, and of the stock, plant, buildings, &c., existing thereon; (2) a description of the improvements which it is proposed to carry out, mentioning the period for which the loan is asked, and the term within which the improvements can be completed; (3) plans and estimates for the proposed improvements; (4) information as to the liabilities and incumbrances on the real property tendered as guarantee, and the amount of the charges thereon; (5) copies of any existing contracts under which the estate, or any part thereof, is hired out; (6) copies of the official valuation of the inventory of the property; and (7) in the event of the loan being guaranteed by Government bonds, a description of the class and value of the same must be given. In case of need the Ministry has the right of inspection on the spot, through the intervention of its experts.

In case the borrower does not fulfil his engagements, the Ministry may take steps to carry out the necessary improvements for his account, or may cease to make further advances on account of the loan. But should the non-execution of his engagements be due to circumstances beyond the control of the borrower, then the repayment of the expenses incurred for his account may be prolonged for some years without the addition of interest.

Finally, if, owing to causes beyond the control of the borrower, the works executed do not fulfil the purpose for which they were undertaken, the latter, with the approval of the Minister of Agriculture, may be relieved of his liability to maintain the improvement, but is not released from the liability to make the stipulated payments, on account of the loan, at the dates fixed, until such time as it shall be fully paid off.

[*Foreign Office Report, Annual Series, No. 1829. Price 1d.*]

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#### CULTIVATION OF WHEAT AND MAIZE IN ARGENTINA.

In his last annual Report to the Foreign Office on the trade of the Argentine Republic, Mr. Ronald Bridgett, Her Majesty's



Consul at Buenos Ayres, refers to the increasing importance of Argentine wheat and maize in the food supply of Europe, and transmits a review of the grain trade of the country, which has been furnished to him by a well-known grain inspector of Buenos Ayres.

It seems that, notwithstanding a continuance of low prices and the unfortunate spoiling of two very promising crops (1894 and 1895), with resulting distress among the poorer and more improvident class of colonists of the province of Santa Fé, there has been no real discouragement of wheat growing in the Argentine Republic; on the contrary, although the arrivals of immigrants are only now becoming important, the acreage of land under wheat has probably increased 30 to 40 per cent. since the big crop year of 1893.

The centre of wheat growing is said to be moving southwards, partly because locusts have become almost established in the north of Santa Fé, but also because better lands for general farming are now obtainable in the west of Buenos Ayres. It is pointed out that the Italian colonists are not, properly speaking, farmers, but really "croppers," who grow wheat, linseed, or maize "on shares" with the owners of the land, paying really most exorbitant rentals and borrowing money at usurious rates in hopes of the recurring good years, and it remains to be seen what will be the food production of this fertile land when, instead of being a migratory class, they settle down on their own lands, and really cultivate and improve their holdings, for they are still very rough in their farming methods, probably not 5 per cent. of wheat being sown with drills, and a very small proportion of the land is even rolled.

Two great lessons have, it appears, been taught to Argentine landowners quite recently that are expected to have wide effect, and may bring about agricultural changes of quick action, the first being the fact that improved cattle sell well, whereas common cattle do not, and the second that dairy farming with pig feeding is profitable.

In Santa Fé, maize is stated to be grown with poor success on account of prevailing dryness of the climate, but farther south cereals can be grown, as well as "alfalfa" or lucerne. So also in the province of Buenos Ayres, it is observed, there are large districts where maize only was grown, but a change is coming gradually, and when a more mixed system of farming is introduced the full work of the entire family may come into play throughout the year, with a correspondingly reduced cost of wheat growing, whereas now there is much idle time between crops.

The butter factories in the south have apparently already found a market for regular supplies of cream, and curing establishments will soon be started to prepare hog products for the large market of Brazil, so that "chacareros," or small farmers, can turn their attention to systematic pig-feeding when there is a good maize crop. Unfortunately, very considerable droughts occur from time to time, and maize is not by any means a safe crop,

even if there are no locusts, but alfalfa is to a great extent independent of rain, and will supply food for pigs—and, indeed, all stock—in a drought.

[*Foreign Office Report, Annual Series, No. 1839. Price 2d.*]

#### AGRICULTURAL DEPARTMENT OF URUGUAY.

The Board have received information through the Foreign Office of the creation at Montevideo of a Department of Live Stock and Agriculture, which will be under the Home Ministry. The staff of the new department will be under the control of a director, who will also have the assistance of an honorary consultative board of six members. Among the duties of the Department will be the collection and diffusion of all information concerning agriculture, the distribution of plants and seeds, the organisation of agricultural education and experiment stations, and the supervision of immigration and colonisation. The existing meteorological observatory is also placed under this Department. It is proposed to publish annual and quarterly returns of statistics relating to agriculture and live stock.

The expenses of the Department will be defrayed out of the Budget, the following sums having been provisionally allocated for this purpose:—

	Dollars.
Direction - - - - -	9,864
Statistical and Publishing Section - -	3,446
Immigration and Colonisation Section -	5,025
Laboratory - - - - -	5,697
Viticulture - - - - -	6,000
Schools of Agriculture and Experimental Farm - - - - -	28,222
Office of Marks and Brands - - - - -	6,240
Annual expenses - - - - -	10,700
Installation - - - - -	75,191
Furniture, instruments, and library - -	5,000

#### MACHINERY EXHIBITION AT KIEFF.

Colonel Stewart, Her Majesty's Consul-General at Odessa, states in a report on the state of agriculture in his district, that an Exhibition of Industrial and Agricultural Machinery is to be held in Kieff from the 13th July to the end of October next year under the auspices of the Kieff Agricultural Society. So far as can be judged at present, there is every prospect of the exhibition being a success, a considerable number of exhibitors having already applied for space. Only Russian-made goods are available for awards, while foreign-made goods may only receive certificates of excellence. Notwithstanding this fact, a considerable number of foreign firms have signified their intention of exhibiting.

## PARLIAMENTARY PUBLICATIONS.

*Committee on Laws relating to Dogs. Report of the Departmental Committee appointed by the Board of Agriculture to inquire into and report upon the working of the Laws relating to Dogs, with Copy of the Minute appointing the Committee. [C.—8320.] Price 2d.*

This Committee, which was appointed on the 30th April 1896, held 13 meetings, examined 27 witnesses, and, on the 27th January last, issued a Report containing recommendations of which the following summary is given:—

1. That the Board of Agriculture in Great Britain and, in the case of Ireland, the Lord Lieutenant and Privy Council, should make a determined effort to stamp out rabies by exercising directly the powers which they already possess under the Diseases of Animals Act.
2. That, following the extirpation of rabies, a general Collar and Registration of Dogs Order should be imposed in Great Britain and Ireland in order to procure more efficient control over dogs, and to diminish the evils which are caused by stray and ownerless dogs.
3. That in order to prevent the introduction of rabies into the United Kingdom, the Board of Agriculture in Great Britain and Lord Lieutenant and the Privy Council in Ireland should exercise the statutory powers which have been conferred upon them with a view to regulating and controlling the importation of dogs from abroad.
4. That in Great Britain it should be made—
  - (i.) The statutory duty of the police to aid in the enforcement of the law relating to dog-licence duties.
  - (ii.) That the whole, and not as at present a moiety, of any penalties recovered by the police, or on information supplied by them, should be paid over to the Police Superannuation Fund, or otherwise applied for their benefit.
  - (iii.) That lists of licences taken out, subdivided in a form convenient for reference, should be supplied by the Board of Inland Revenue to the various police forces.
5. That the determination of questions of exemption of farmers' and shepherds' dogs from dog-licence duty, and the issue of certificates of exemption, should be transferred, as far as England and Wales are concerned, from the Board of Inland Revenue to justices in petty sessions



specially summoned for the purpose, and in Scotland to the authority exercising similar functions.

6. That the definition contained in section 22 of the Customs and Inland Revenue Act of 1878, of farmers' and shepherds' dogs for which exemption from duty may be obtained, should be amended, so as to make the intention of the Legislature less ambiguous.
7. That in Ireland the law be so altered that licence duty shall be payable for each dog that has attained the age of six months, and in this respect that the law be assimilated to that of Great Britain.

That failure to comply with the provisions of the law should subject the offender in each case to the payment of a double licence duty in addition to the penalty provided by section 20 of the Dogs Regulation Act.

8. That in Great Britain the powers which county councils possess under section 16 of the Local Government Act, 1888, and section 57 of the Local Government (Scotland) Act of 1889, to make byelaws for the prevention and suppression of nuisances, should be extended so as to enable byelaws to be made for enforcing the keeping of dogs under control, and preventing the straying of dogs, or otherwise with a view to the protection of cattle and sheep from injury.

That legislation of a similar character, and with the same object, should be applied to Ireland.

9. That in order to secure greater uniformity and simplicity in the laws relating to dogs in the United Kingdom, a consolidating and amending Act be passed framed on the lines of the Bills introduced for this purpose in the House of Commons in 1894 and the House of Lords in 1895.
10. That as regards Ireland, in addition to provision being made in such Act for the payment out of dog-licence duties or otherwise of expenses arising from the seizure of stray dogs, that moneys out of the same fund should be allocated for the purpose of providing suitable accommodation for their detention.

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*Agricultural Statistics, Ireland.—Tables showing the Extent in Statute Acres and the Produce of the Crops for the Year 1896. [C.—8192.] Price 4d.*

The preliminary statistics of the acreage under different crops in Ireland were noticed in the last number of the Journal, and the corrected figures of acreage, together with the produce, are now given in the returns under notice.

The total acreage under all kinds of crops in 1896 is given as 4,843,220 acres, as against 4,880,527 acres in 1895. The acreage of the more important crops is as follows:—

Crops.	1896.	1895.	Average, 1886-95.
Wheat - - - - -	Acres. 38,019	Acres. 36,532	Acres. 71,497
Oats - - - - -	1,193,581	1,216,401	1,253,903
Barley - - - - -	173,032	171,659	174,070
Bere - - - - -	333	139	306
Rye - - - - -	13,715	11,520	12,912
Potatoes - - - - -	705,665	710,436	761,405
Turnips - - - - -	308,471	313,281	301,512
Mangel-wurzel and beetroot - - -	54,301	53,027	47,078
Flax - - - - -	72,253	95,203	99,142
Clover, sainfoin, and grasses under rotation	655,071	635,586	} 2,148,805
Permanent pasture or grasses not broken up in rotation.	1,547,353	1,558,890	

The produce in 1896 is given below:—

Crops.	Total Produce.			Yield per Acre.		
	1896.	1895.	Average, 1886-95.	1896.	1895.	Average 1886-95.
Wheat - - - - -	Cwts. 639,673	Cwts. 594,027	Cwts. 1,113,838	Cwts. 16'8	Cwts. 16'3	Cwts. 15'7
Oats - - - - -	17,008,134	18,221,202	18,039,671	14'2	15'0	14'4
Barley - - - - -	3,142,580	2,845,172	2,845,980	18'2	16'6	16'3
Bere - - - - -	4,703	1,939	4,116	12'3	13'9	13'4
Rye - - - - -	174,673	153,867	162,908	12'7	13'4	12'6
Potatoes - - - - -	Tons. 2,701,000	Tons. 3,472,015	Tons. 2,744,963	Tons. 3'8	Tons. 4'9	Tons. 3'6
Turnips - - - - -	4,782,759	4,490,559	4,022,336	15'5	14'3	13'3
Mangel-wurzel and beetroot -	782,572	827,669	674,420	14'6	15'6	14'2
Hay : from clover, sainfoin, and rotation grasses.	1,326,005	1,156,389	} 4,585,566 {	2'0	1'8	} 2'1
„ from permanent pasture or grasses not under rotation.	3,405,450	3,405,685		2'2	2'2	
Flax - - - - -	10,292	12,193	17,119	Stones. 22'8	Stones. 20'5	Stones. 28'0

There appears thus to have been an increase in the total produce of wheat, due partly to a slightly increased acreage and partly to a better return per acre, as compared with 1895. Both acreage and total production were, however, much below the average of the preceding ten years, while the yield per acre was considerably above the normal. The yield of oats was nearly up to the average, but below that of 1895. Barley, on the other hand, gave a good crop, nearly 2 cwt. above the average.

Potatoes gave a yield slightly above the average upon a somewhat smaller acreage; the produce was, however, much below the high figure of 1895. Turnips yielded 1·2 tons per acre more than in 1895, when the produce was 1 ton per acre above the mean of the ten years 1886-95. Mangel-wurzel and beetroot—rather more than a normal crop—fell off from the high figures of 1895. The yield of hay was about an average.

A much smaller area under flax only yielded a crop some 2 stones per acre above the poor return of 1895, and more than 5 stones below the average.

The “Champion” still continues to form by far the largest proportion of the Irish potato crop, but the quantity, as compared with other kinds, appears to show a slight tendency to decrease, which seemed to set in after 1893. This variety in 1896 formed 75 per cent. of the total crop, against an average during the ten years 1884-93 of 79·3 per cent. The “Champion” is stated to have been first introduced in quantity into Ireland after the failure of the potato crop in 1879.

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*Agricultural Statistics, Ireland.—General Abstract of Forestry Operations in Ireland, during the Year ended 30th June 1896.*

This publication shows that the area under Woods and Plantations in Ireland in 1896 was 307,407 acres. Comparing 1896 with 1851 there has been an increase of about 0·8 per cent., the extent in 1851 having been 304,906 statute acres.

It appears that 1,070 statute acres were planted with trees in Ireland during the year ended 30th June last, and the total number of trees planted on these 1,070 acres was 2,852,083. The number and description of the trees planted is as follows:—Larch, 498,762; fir, 294,233; spruce, 133,918; pine, 59,590; oak, 20,885; ash, 13,900; beech, 18,550; sycamore, 21,065; elm, 16,050; other trees, 48,471; and mixed trees, the number of each kind being unspecified, 1,726,659.

The number of trees felled both for clearance and for thinning plantations during the year amounted to 548,839, viz., 135,526 in Leinster, 315,511 in Munster, 58,208 in Ulster, and 39,594 in Connaught. Tipperary, Waterford, Cork, and Limerick are the counties in which operations of this nature were most extensive, and in these counties the number ranged from 46,358 in Limerick to 87,930 in Tipperary. The area returned as cleared is 1,126 acres, viz., 210 in Leinster, 679 in Munster, 138 in Ulster, and 99 in Connaught.

Of the 548,839 trees felled, 108,702 were used for “propping,” which appears to have been the chief purpose to which the timber of almost all descriptions was applied. As regards the disposal of 90,035 of the trees felled, the only information



obtained is that they were used "locally," and there were 140,251 (including 55,950 in Munster (respecting which the only return is that they were "exported.")

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*Land Registry.—General and detailed Reports of the Assistant Registrar of the Land Registry on the Systems of Registration of Title now in operation in Germany and Austria-Hungary; with Appendices. [C.—8139.] Price 1s. 7d.*

This publication contains a general report of the method and result of an inquiry into the working of the system of land transfer by registration of title in Germany and Austria-Hungary, which are the only large European States in which the system is at present in force.

The inquiry extended not only into the legal but also into the financial and administrative branches of the subject, the fees and expenses, the staff, buildings, precautions against fire and other accidents, the connection with the Cadastral surveys, the relations of the central and local branches, protection against fraud and error, compensations for errors, the facilities afforded for landowners and business men in transactions relating to land, and generally into all points on which useful information appeared to be obtainable.

Full particulars with regard to these subjects are to be found in an accompanying detailed report which gives a general survey of the actual daily working of the system of registration of title under a considerable variety of conditions: in its application to estates of various sizes, values, characters, and situations, and subject to numerous diverse legal, commercial, and political incidents.

In some of the districts observed, titles had been registered from time immemorial; in others they had been partially registered for a long period; while in others the system is totally new and unknown, and has been preceded by no registration at all. The particular examples collected in the detailed report include (for instance) such great estates as the ancestral domains of the Bohemian nobility (among whom are to be found some of the largest landowners in Europe), subject to the strictest entails, carrying political privileges of the highest importance, and specially registered in immense separate volumes in the provincial capital; they also include (by way of contrast) the tiny subdivisions of the peasant proprietors of the Rhine Provinces, where the principles and practice of the *Code Napoléon* are still deeply rooted in the customs and feelings of the people. They include, on the one hand, specimens taken from the rapidly developing building properties in the suburbs of Berlin, with their villa residences and restrictive covenants, and, on the other, remote Silesian manors with their tenant farmers, antique rights of common, and commuted rents and services, dating

from feudal times. They show the system as applied to plains like the corn-growing regions of Hungary, to the busy mining and industrial districts of Saxony and the Black Country of Germany close to the Russian frontier, as well as to the picturesque Alpine hamlets and pastures—with their innumerable interdependent rights of way, water, and other complicated easements—to be found in Styria and the Salzkammergut; they pass from the intricacies of cellars and flats, courts and passages, of the Jews' quarter of the city of Prague to the simple conditions of a quiet agricultural district in Brandenburg; from mortgages on first-class properties, involving hundreds of thousands of pounds, and subject to the most complicated subsequent dealings by way of transfer, alteration, subdivision, and collateral security, down to rows of petty charges on diminutive shares in an inconsiderable estate; from great cities where values are measured almost by the square inch, to trackless wastes and bare mountains of scarcely any value at all.

Over the whole of this vast and diversified tract—embracing an area more than seven times the size of England and Wales—systems of registration of title differing in no essential particular from the systems established under the Torrens Acts in Australia, and partially established under the Land Registry Acts in England and Ireland, have been in almost universal operation for a considerable period, amounting in the principal Austrian provinces to upwards of 80 years, and in certain places dating from a much more remote period. The type of registration followed bears throughout a remarkable similarity to that of Lord Westbury's Act of 1862—every kind of interest in land being capable of registration: resulting, not unfrequently, in the formation of a somewhat involved and complicated record. It will be remembered, by those familiar with the subject, that Lord Cairns's Land Transfer Act of 1875, by excluding certain minor interests from the register, provided a remedy for what was deemed a defect in the 1862 Act in regard to this.

Notwithstanding this liability to become complicated—of which instances are given in the detailed report—the continental registers appear, according to every test by which their practical efficiency can be tried, to be giving complete satisfaction, and to enable landowners, large and small, habitually to transact sales and mortgages with an ease, rapidity, cheapness, and security which, to persons accustomed only to the conditions of land transactions in this country, will appear almost incredible.

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*The Annual Local Taxation Returns (Scotland) for the Year 1893-4.* [H.C.—417. Session 2.] Price 2s. 2½d.

This is the fourteenth annual volume of Returns under the Local Taxation Returns (Scotland) Act, 1881.

The year embraced in the present returns is the local financial year 1893-4. All the accounts, however, are not made up to the

same date. The parochial board accounts and school board accounts are applicable to the year ended 14th May; the heritors' accounts, as a rule to the same date, though frequently the financial year closes at another date and the county council accounts to 15th May. In burghs the accounts of the Burgh Commissioners are made up to 15th May, those of the "common good" to other dates, usually in October. The accounts of harbour authorities and district fishery boards are closed at varying dates during the year.

It appears that during the year named the total receipts (other than from loans) of the local authorities amounted to 8,305,957*l.*, and the expenditure not defrayed out of loans was 8,070,244*l.* The receipts from loans were 2,061,307*l.*, and the expenditure from such sources was 2,141,377*l.*

The local authorities whose finances are included in the above statement consist of parochial, school, district lunacy, and district fishery boards; heritors (for ecclesiastical purposes), county councils, burghs, and harbours and ports.

The main items of expenditure (including the sums defrayed out of loans) were for education (1,664,796*l.*), interest on loans (1,145,131*l.*), private lighting (1,112,808*l.*), sanitation (993,359*l.*), poor relief (950,563*l.*), and roads and bridges (764,973*l.*). On slaughterhouses there was spent a total of 24,124*l.*, under the Contagious Diseases (Animals) Act 42,326*l.*, and for valuation of lands and heritages 16,849*l.*

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*The Annual Local Taxation Returns (England) for the Financial Year 1894-95. Part II. [H.C.—367.] Price 6½*d.**

This publication of the Local Government Board contains an abstract of the accounts of county councils (other than the London County Council) and joint committees of such councils, as well as the accounts of pauper lunatic asylums, other than those belonging to the county and city of London.

It appears from the Return that the rateable value, according to the county rate basis, of the property liable to be rated to the rate for general county purposes in the 60 administrative counties, and in the Scilly Islands, in which rates for those purposes were raised during the year in England and Wales, excluding the county of London, was 95,211,626*l.*

The special county purposes for which rates were levied, so far as the purposes were shown by the returns, included police, Contagious Diseases (Animals) Act, bridges, Weights and Measures Act, lunatic asylums, sea fisheries, Food and Drugs Act, and technical and intermediate education, whilst in many cases these purposes were provided for out of the rates levied for general county purposes.

The highest rates for general and special county purposes in the administrative counties were 10*d.* and 5*d.* in the £, and the lowest ½*d.* and 1*d.* in the £ respectively. In the Scilly Islands the rates for general purposes amounted to 1*s.* 2*d.* in the £. In



one county no rates for general county purposes, and in 16 counties no rates for special county purposes, were raised during the year.

The total receipts of the county councils, the council of the Scilly Islands, and the joint committees for Lincolnshire, Suffolk, Sussex, and Yorkshire during the year, excluding loans, and sums received for re-investment in respect of the Police Pension Funds, amounted to 6,712,464*l*.

Comparing the receipts in 1894-5 with those in the preceding year, it is observed that the total receipts were larger by more than 150,000*l*.; but that this increase was almost wholly attributable to the larger sum which was raised by means of rates, as in many of the other items of receipt there was a decrease. The total rates raised for general and special county purposes in 1894-5 were 238,618*l*. in excess of the amount raised during the preceding year. There was a small increase in the sums received from the local taxation account and in some minor items; but, on the other hand, there was a small decrease in the sums received from the Treasury, and from fines, penalties, and fees, and a very large decrease, amounting to no less than 117,923*l*. in the sums received from other local authorities. This latter decrease would, probably, be altogether accounted for by the smaller sums which were received by county councils in respect of the capital payments under the awards of the Local Government Act Commissioners.

The expenditure of the councils during the year (excluding that defrayed out of loans), namely, 6,720,471*l*., was almost the same in amount as the receipts from sources other than loans. There was a small falling off in the total expenditure in 1894-95 as compared with that of the preceding year, but there appear to be no special alterations in particular items of expenditure to which it is necessary to call attention.

The expenditure of the county councils under the Contagious Diseases (Animals) Act, 1894-5, was 23,388*l*., as compared with 29,958*l*. in 1893-94.

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*Rateable Value of Lands. — Statements showing the Decrease or Increase in the Rateable Value of "Lands" in 1894, as compared with 1870, in the Poor Law Unions of England and Wales; and the Decrease or Increase in the Gross Annual Value of "Lands" under Schedule A. in each County of England and Wales in 1894, as compared with 1879, with Diagram Maps. [C.—8300.] Price 1s. 2d.*

This publication, which has been issued by the Royal Commission on Agriculture, contains two diagram maps, of which one illustrates the decrease or increase in the rateable value of "lands" in the poor law unions of England and Wales in 1894 as compared with 1869-70; the other illustrates the variations in the income-tax assessments of lands under Schedule A. between 1879-80, and 1894-95.

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*Local Taxation Returns (Ireland). Returns of Local Taxation in Ireland for the Year 1895. Collected and compiled under the direction of the Local Government Board by desire of His Excellency the Lord Lieutenant of Ireland.* [C.—8198.] Price 6½d.

It is stated in this publication that the local taxation of Ireland, after making the deductions necessary on account of sums which appear twice in the receipts of local authorities, consequent on the fact that contributions are sometimes made from the receipts of one local authority towards the expenditure of another, may be set down for the year 1895 at 3,842,005*l.*, being an increase of 92,583*l.*, or 2·4 per cent. on the amount in the previous year.

Information is also given in the report regarding dog licences, burial boards, poor rates, drainage, &c.

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*Report of the Committee of Council on Education (England and Wales), with Appendix, 1895-96.* [C.—8249.] Price 2*s.* 10*d.*

This publication contains the report of the proceedings of the Education Department for the promotion of elementary education in England and Wales. Among other information regarding agricultural education contained in the volume, the statistics of inspection of annual grant schools indicate that under Article 101(*f*) of the Code, 1,196 scholars were examined in the principles of agriculture against 1,231 in the year 1894-95; viz., 619 in the 1st stage, 357 in the 2nd, and 220 in the 3rd. Grants of two shillings per head were paid to 326 scholars, and of three shillings per head to 870 scholars.

Claims were also received from evening continuation schools comprising 185 departments, representing 2,943 scholars, for grants under Article 13(*b*), as regards agriculture and from 46 departments on behalf of 686 scholars as regards horticulture.

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## IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE IN THE YEARS 1895 AND 1896.

### IMPORTS AND EXPORTS OF LIVE ANIMALS.

The total imports of cattle into the United Kingdom, in 1896, have been greater by more than a third than those of 1895, and larger than the number received in any previous year, 1890 only excepted. The imports of sheep, which rose so rapidly from 63,000 in 1893 to upwards of a million head in 1895, have again somewhat declined to about three-fourths of that year's figure. By reference to the following table it will be seen that both in the case of cattle and of sheep the imports, with but small exceptions, come from North and South America.

Countries.	Cattle.		Sheep.	
	1895.	1896.	1895.	1896.
	No.	No.	No.	No.
Channel Islands - - -	1,708	1,719	—	—
Iceland - - - - -	—	—	65,046	63,293
Norway - - - - -	120	34	20,649	11,874
Argentina - - - - -	39,494	65,699	308,094	339,381
Australasia - - - -	1,659	32	2,825	518
Canada - - - - -	95,994	101,656	214,310	83,767
United States - - -	276,532	393,054	453,250	266,760
Uruguay - - - - -	57	332	624	3,090
Other countries - - -	1	27	672	909
Total - - - - -	415,565	562,553	1,065,470	769,592

Compared with 1895, cattle from the United States show a large increase, but the numbers are only slightly more numerous than in 1894. Sheep imported from that country are fewer than in 1895 by 40 per cent, but the numbers are still largely in excess of the figures for 1894. Cattle from Canada, it may be remarked, show an increase over 1895, and reach a higher figure than in any year since 1891, while imports of sheep from Canada, although less than in 1895 by over 60 per cent. are still much greater than before 1894. Both cattle and sheep from Argentina again show a large increase, and Uruguay would appear also to be now beginning to increase its exports. Shipments from Australasia, however, received a decided check in the past year.



The following table shows that the value of the oxen and bulls imported in 1896 fell from an average of 17*l.* 6*s.* per head to 16*l.* 11*s.*, and that sheep also declined by 4*s.* per head :--

Animals.	Numbers.		Values.	
	1895.	1896.	1895.	1896.
	No.	No.	£	£
Oxen and Bulls - - -	413,337	558,361	7,150,812	9,241,455
Cows - - - - -	1,880	3,987	31,049	62,231
Calves - - - - -	348	205	1,179	1,369
Sheep and Lambs - - -	1,065,470	769,592	1,782,544	1,133,634
Swine - - - - -	321	4	668	10

The exports of cattle of British and Irish origin very considerably declined, but those of sheep increased, as will be seen from the following table. The increasing value of these animals is, however, an indication of the larger proportion in which this trade consists of high class and pedigree animals. Last year it would appear that the average value of the exported cattle per head was 27*l.* 18*s.* against only 16*l.* 13*s.*, in 1895; for sheep the average rose to 11*l.* 6*s.* against 8*l.* 11*s.* 6*d.* The much reduced exports of swine were valued at 7*l.* 19*s.* per head in 1896.

Description.	Numbers.		Values.	
	1895.	1896.	1895.	1896.
	No.	No.	£	£
Cattle - - - - -	7,951	4,362	132,413	121,624
Sheep and lambs - - -	6,966	9,499	59,760	107,377
Swine - - - - -	3,069	359	13,956	2,847

#### IMPORTS OF DEAD MEAT.

The year has been remarkable in the extent of the dead meat import trade, most classes of meat showing increases, both in quantity and aggregate values, not only over the amounts entered in 1895, but also over the amounts recorded in any previous year. The United States furnished about seven-ninths of the fresh beef, and two-thirds of the bacon and hams imported, while Australasia and Argentina together sent some nine-tenths of the mutton. The most important feature in the bacon trade is the steadily increasing importance of Denmark and Canada, the latter colony sending us 70 per cent. more than in 1895.

Exports of beef from Argentina, it may be noted, increased from 23,384 to 50,095 cwts., or 114 per cent.

The details of the dead meat trade in the past two years may be contrasted as under; and it will be observed as regards the values of the meat imported there is again a decline alike in fresh beef which is put at 37s. 10d. per cwt. against 39s. in 1895 and in fresh mutton which was 32s. 7d. against 35s. 2d. per cwt. The value of imported bacon has been still more largely reduced and stands for the year at 34s. 6d. per cwt. against 39s. in 1895.

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Beef:	Cwts.	Cwts.	£	£
Fresh - - - -	2,191,037	2,659,700	4,275,548	5,028,828
Salted - - - -	219,956	247,267	286,511	303,433
Preserved otherwise than by salting.	470,739	401,281	1,164,491	1,052,401
Total Beef - - -	2,881,732	3,308,248	5,726,550	6,384,662
Mutton:				
Fresh - - - -	2,611,435	2,895,158	4,595,678	4,718,576
Preserved - - - -	200,471	122,851	334,607	201,841
Total Mutton - - -	2,811,906	3,018,009	4,930,285	4,920,417
Pig meat:				
Fresh pork - - - -	288,284	299,411	664,946	687,241
Salted " - - - -	220,168	255,339	269,829	291,966
Bacon - - - -	4,063,418	4,549,526	7,925,979	7,854,515
Hams - - - -	1,289,518	1,459,412	2,898,018	3,136,089
Total Pig Meat - - -	5,861,388	6,563,688	11,758,772	11,969,811
Meat, unenumerated (fresh, salted, or otherwise preserved).	422,411	457,963	1,031,558	1,076,498
Total - - - -	11,977,437	13,347,908	23,447,165	24,351,388
Rabbits - - - -	120,279	170,873	315,594	401,614
Poultry and Game (alive or dead)	--	—	605,160	605,458

#### IMPORTS OF DAIRY PRODUCE, EGGS, AND LARD.

The imports of dairy produce, eggs, lard, &c. have been in the majority of cases greater than in 1895, and are shown in the following table. Imports of margarine, which still come mainly from Holland, continue to show a decline, as has been the case

since 1893. The average value of this butter substitute is also slightly lower.

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Butter - - - Cwts.	2,825,662	3,037,947	£ 14,245,230	£ 15,344,083
Margarine - - - "	940,168	925,934	2,557,170	2,498,425
Cheese - - - "	2,133,819	2,244,535	4,675,130	4,900,428
Lard - - - "	1,742,688	1,739,723	2,941,941	2,268,029
Condensed milk - - "	545,394	611,685	1,083,559	1,172,432
Fresh milk and cream - Galls.	126,995	22,776	19,991	5,489
Eggs - - - Gt. hund.	12,722,586	13,244,893	4,003,446	4,184,567

### Butter.

The quantity of butter entering our ports still continues to grow, the arrivals of 1896 exceeding any previous record, and being double those of 1886. The value per cwt. would appear to have in this instance slightly increased, the customs returns averaging 5*l.* 1*s.* 0*d.* as against 5*l.* 0*s.* 10*d.* in 1895; both figures are, however, below the average values of previous years. The shipments of Australasian butter show a decline of nearly 30 per cent., a check to the growing trade in that quarter, probably due to the drought which has so materially reduced the exports of other agricultural produce from those colonies. It will be seen that there is no falling-off in the shipments from New Zealand. North America has more than doubled its exports of butter, although the total is not relatively large. Denmark still supplies us with by far the largest quantity of foreign butter consumed in the United Kingdom, a sum of 6,288,000*l.* representing the payment for Danish butter within the year. Although relatively small, the exports of butter from Argentina have reached 15,763 cwts. in 1896 against 3,676 in 1895.

Countries.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	Cwts.	Cwts.	£	£
From Denmark - - -	1,162,770	1,228,784	5,948,463	6,288,407
" France - - -	454,843	467,601	2,443,734	2,537,690
" Sweden - - -	310,809	323,823	1,644,111	1,664,685
" Holland - - -	191,201	234,469	939,326	1,156,736
" Victoria - - -	212,797	154,865	982,682	769,695
" United States - - -	66,932	141,553	271,776	617,525
" Germany - - -	112,338	107,825	565,093	536,246
" Canada - - -	38,949	88,357	153,401	339,744
" New Zealand - - -	53,262	56,373	232,009	277,898
" other countries - - -	221,761	234,291	1,064,635	1,155,457
Total - - -	2,825,662	3,037,947	14,245,230	15,344,083



*Cheese.*

The drop noticed in the imports of cheese from the United States last year was partially recovered in 1896, while Canada, which is much the largest exporter of cheese to this country, again sent an increased supply. In this commodity, as in butter, a marked feature is the diminished quota from Australasia, and the 55,149 cwts. thence imported, which compared with 92,759 cwts. in the preceding year, came almost wholly from New Zealand, the Australian continent itself sending only 54 cwt. The average value of imported cheese was 43s. 8d. per cwt. in 1896, and 43s. 10d. in 1895.

Countries.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	Cwts.	Cwts.	£	£
From Canada - - -	1,150,018	1,234,297	2,335,548	2,589,301
„ United States - - -	500,419	581,187	1,099,283	1,234,037
„ Holland - - -	305,920	292,988	774,790	734,641
„ other countries - - -	177,462	136,063	465,509	342,449
Total - - -	2,133,819	2,244,535	4,675,130	4,900,428

## IMPORTS AND EXPORTS OF HORSES.

Both imports and exports of horses increased to a considerable extent during the past year; the increased imports are accounted for by the larger numbers entered from the United States, while the greater portion of the larger exports of British and Irish horses continue to go to Belgium.

Countries.	Numbers.		Values.	
	1895.	1896.	1895.	1896.
IMPORTS.	No.	No.	£	£
From United States - - -	10,351	17,930	345,375	532,623
„ Canada - - -	12,903	11,852	369,157	318,639
„ other countries - - -	10,838	10,895	206,958	176,474
Total - - -	34,092	40,677	921,490	1,027,736
EXPORTS (British and Irish).				
To Holland - - -	5,571	6,433	66,972	70,441
„ Belgium - - -	10,274	15,845	155,974	223,112
„ France - - -	3,669	3,994	194,659	215,194
„ other countries - - -	2,050	3,208	132,277	162,815
Total - - -	21,564	29,480	549,882	671,562

### IMPORTS OF GRAIN AND FLOUR.

The imports of grain and flour during 1896 represented in value a total of nearly 53,000,000*l.*, whereof not much short of 31,000,000*l.* was paid for wheat and wheat flour. Maize imports were valued at 9,400,000*l.*, and other grains formed a smaller proportion of the whole. The details are shown as under for the past two years :—

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	Cwts.	Cwts.	£	£
Wheat - - -	81,749,955	70,027,880	22,531,176	21,678,704
Wheat meal and flour -	18,368,410	21,293,220	7,679,013	9,216,048
Barley - - -	23,618,867	22,476,702	5,538,405	5,703,318
Oats - - -	15,528,310	17,585,130	3,723,465	4,225,576
Peas - - -	2,422,851	3,018,357	693,828	852,465
Beans - - -	4,130,538	3,012,990	1,079,780	837,417
Maize - - -	33,944,350	51,772,100	7,808,860	9,423,554
Other kinds of corn and meal.	—	—	668,766	855,615
Total - - -	—	—	49,723,293	52,792,697

The most remarkable increase occurs in maize, the receipts of which were 50 per cent. more than the quantities of 1895, bringing up the total to a larger figure than has before been recorded, or some 8,000,000 cwts. in excess of the receipts of 1890, the year in which, previously to 1896, the arrivals of maize reached their maximum. Of the total of 52,000,000 cwts., more than half came from the United States, but some 16,000,000 cwts. came from Argentina, a country which sent less than half this amount in 1895 and only 334,000 cwts. in 1894.

The supplies of wheat arriving in the past year were less on the whole than in 1895, and practically at the same level as in 1894. Those of flour were greater, but taken together, at the equivalent in grain, the aggregate supply of foreign bread stuffs was less than in 1895 by about 7,700,000 cwts. The arrivals of wheat in grain showed a more than usual variation in their source under the circumstances of the year. The Russian, Argentine, and Indian quotas were each of them smaller than last year by amounts representing a reduction of 25 per cent., 56 per cent., and 76 per cent. respectively, thus making up a total drop of nearly 19,000,000 cwts., while the Australasian supply being nearly altogether absent, added another 3,500,000 cwts. to the deficit. Against this the United States supplied an excess rather more than equal to the Australasian shortage, and Roumania, Canada, and some other exporting countries by their liberal consignments of grain reduced by more than a third the falling off from the other three countries.

This was, moreover, accompanied by a large increase in the flour, mainly from the United States, but also in some measure, and under special conditions, from France, where an arrangement exists respecting the temporary admission of foreign grain for re-export, which is apparently equivalent to a bounty on the export of flour. The totals from the countries undernoted were as follows :—

Countries.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Wheat :—	Cwts.	Cwts.	£	£
From United States -	27,084,120	30,694,800	7,760,967	9,704,950
„ Russia -	23,017,035	17,241,600	6,048,929	5,187,240
„ Roumania -	2,022,200	5,401,300	537,756	1,696,170
„ Argentina -	11,400,360	4,927,600	3,142,378	1,439,715
„ British North America.	1,844,600	3,617,900	556,920	1,092,372
„ British East Indies.	8,802,950	2,112,940	2,342,132	625,092
„ Australasia -	3,486,620	8,500	1,014,747	2,400
„ other countries	4,092,070	6,023,240	1,127,347	1,930,765
Total -	81,749,955	70,027,880	22,531,176	21,678,704
Wheat flour :—				
From United States -	13,131,850	15,905,100	5,384,658	6,786,600
„ British North America.	2,343,300	1,932,720	1,003,779	816,950
„ France -	1,125,990	1,692,540	414,203	716,534
„ Austrian Territories.	1,305,760	1,388,300	706,818	768,396
„ other countries	461,510	374,560	169,555	127,568
Total -	18,368,410	21,293,220	7,679,013	9,216,048

The change in wheat values in the closing months of the year, it may be remarked, which substituted an average price of 6s. 10d. per cwt. for one of 5s. 10d. during the first eight months of the year, had a very notable effect upon the import totals of our trade accounts by nearly doubling the supplies of wheat from the Atlantic ports of the United States, from Canada, and from Roumania, entering the ports of the United Kingdom after the 1st September, as compared with the arrivals from the same quarters in the last four months of the preceding year.

#### IMPORTS AND EXPORTS OF WOOL (SHEEP AND LAMBS').

The total imports of this commodity in 1896 fell off from the large amounts noted in 1895, and were but little higher than the imports of two years ago. The decline is due to restricted shipments from Australasia. From British possessions in South Africa there is considerable improvement, and the



92,000,000 lbs. represent the largest quantity ever received from that quarter. The average value, however, slightly increased, being about  $8\frac{3}{8}d.$  per lb. against about  $8\frac{1}{8}d.$  in 1895. This increased value is due to the Australasian cargoes; Cape wool met with less favour.

Wool, Sheep and Lambs'.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	lbs.	lbs.	£	£
From Australasia -	541,394,083	477,645,180	18,204,049	17,314,567
From British Possessions in South Africa.	75,334,080	91,704,400	2,916,931	2,934,111
From countries in Europe.	62,222,814	53,190,485	2,405,602	2,153,027
From British East Indies.	38,993,242	43,353,360	1,038,648	1,164,248
From other countries -	53,010,984	47,685,748	1,460,730	1,392,393
Total - -	770,955,203	713,579,173	26,025,960	24,958,346

Of the total imports nearly one half, or 334,000,000 were re-exported, and 379,000,000 lbs. were retained for home consumption against 367,000,000 lbs. in 1895. The value of the re-exported wool, however, declined, averaging but  $8\frac{1}{4}d.$  in 1896 as compared with  $9d.$  in 1895. The difference in the average value of exports and imports was thus  $\frac{7}{8}d.$  in 1895 and  $\frac{3}{8}d.$  in 1896. The smaller quantity of home wool exported was valued at about  $9\frac{1}{2}d.$  per lb. as in 1895.

Wool, Sheep and Lambs'.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	lbs.	lbs.	£	£
To Germany :				
Home - -	2,614,100	1,975,500	116,919	94,798
Foreign - -	120,466,243	106,791,200	4,974,494	4,050,146
To France :				
Home - -	1,034,200	1,079,300	42,079	44,331
Foreign - -	96,071,500	96,107,400	3,568,016	3,554,947
To United States :				
Home - -	13,823,400	11,626,300	485,599	399,938
Foreign - -	125,226,620	67,965,800	4,132,619	2,210,616
To other countries :				
Home - -	4,195,500	3,377,800	213,963	178,936
Foreign - -	62,423,550	63,539,500	2,462,107	2,420,630
Total - { Home -	21,667,200	18,058,900	858,560	718,003
Foreign -	404,187,913	334,403,900	15,137,236	12,236,339

The United States took little more than half their 1895 total, and thus ranked in 1896 only as the third largest customer for this product, instead of occupying the first place as in the earlier year.

### IMPORTS OF FRUIT, VEGETABLES, AND HOPS.

Amongst imports of fruit, the supply of apples seems to have been nearly doubled as compared with 1895, and the total considerably exceeds the arrivals of 1894, when close upon 5,000,000 bushels were imported. The average value dropped to only 5s. 1d. per bushel against 5s. 10d. in the preceding year. A very large crop was officially reported from the other side of the Atlantic. Oranges have declined, but other fruits came in more or less increased quantities.

Of vegetables, the value of the potatoes shipped to this country has not fallen nearly so much as the quantity, always a variable amount. An increased weight of onions, on the other hand, is accompanied by a fall in value.

The imports of hops have slightly declined in the year, and their value has diminished still more.

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
<b>Fruit :—</b>	<b>Bushels.</b>	<b>Bushels.</b>	<b>£</b>	<b>£</b>
Apples - - -	3,292,262	6,177,192	960,273	1,582,471
Oranges - - -	7,708,719	7,230,527	2,111,190	1,925,473
Lemons - - -	1,165,490	1,660,360	365,320	444,202
Cherries - - -	195,632	219,367	96,047	105,811
Plums - - -	401,080	560,246	166,045	241,782
Pears - - -	497,146	483,823	166,696	206,674
Grapes - - -	865,287	883,254	486,981	442,830
Unenumerated - - -	1,249,563	1,427,105	513,261	590,826
<b>Total - - -</b>	<b>—</b>	<b>—</b>	<b>4,865,813</b>	<b>5,540,069</b>
<b>Vegetables :—</b>				
Onions - - -	5,734,768	6,085,505	696,428	681,879
	Cwts.	Cwts.		
Potatoes - - -	3,758,156	2,244,627	1,169,922	907,875
Unenumerated - - -	—	—	1,277,266	1,284,634
<b>Total - - -</b>	<b>—</b>	<b>—</b>	<b>3,143,616</b>	<b>2,874,388</b>
<b>Hops - - -</b>	<b>217,161</b>	<b>267,041</b>	<b>644,505</b>	<b>591,582</b>

# IMPORTS OF HAY AND STRAW.

The quantities of hay and straw during the past two years have been as under :—

Countries.	Hay.		Straw.	
	1895.	1896.	1895.	1896.
	Tons.	Tons.	Tons.	Tons.
Belgium - - - -	6,236	10,968	604	3,843
France - - - -	16,379	20,597	30,460	54,084
Germany - - - -	5,198	10,205	1,984	3,592
Holland - - - -	24,267	40,017	6,125	10,794
United States - -	36,176	5,939	16	22
Other countries -	30,539	20,187	2,343	1,249
Total - - - -	118,795	107,913	41,532	73,584

# IMPORTS OF FLAX, HEMP, JUTE, AND SEEDS.

The first three of these articles exhibited a decline in 1896. This was also the case with rape seed ; other seeds showed an increase in quantity, but a considerably lower average value.

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
	Tons.	Tons.	£	£
Flax - - - -	102,622	95,199	3,270,840	3,117,316
Hemp - - - -	97,951	91,717	2,087,667	1,951,486
Jute - - - -	392,025	340,649	4,358,036	4,167,992
Total - - - -	592,598	527,565	9,716,543	9,236,794
Seeds :—	Cwts.	Cwts.		
Clover and grass - -	396,280	405,071	855,524	787,764
	Qrs.	Qrs.		
Flax and linseed - -	1,969,987	2,578,864	3,366,113	4,022,676
Rape - - - -	325,393	180,270	307,348	196,237
Total - - - -	—	—	4,528,985	5,006,677



## IMPORTS OF HIDES, WOOD, AND TIMBER.

Hides came in smaller quantities, but at a slightly enhanced average value, than in 1895. Imports of timber and wood increased, as did their average value.

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Hides, raw, and pieces thereof:—	Cwts.	Cwts.	£	£
Dry - - - -	491,547	369,063	1,153,757	905,427
Wet - - - -	771,133	604,728	1,650,369	1,319,501
Total - - -	1,262,680	973,791	2,804,126	2,224,928
Wood and timber:—	Loads.	Loads.		
Hewn - - - -	2,260,761	2,433,795	4,181,436	4,889,393
Sawn or split, planed or dressed	5,061,983	6,032,222	10,695,916	13,380,660
Staves of all dimensions - -	144,751	138,399	594,615	655,243
Total - - -	7,467,498	8,604,416	15,471,967	18,925,296

## IMPORTS OF MANURES.

The accompanying table shows that the imports of all classes of manures were less than in 1895. The large importation of guano in that year would appear to have been due to some exceptional demand, the quantity entered in 1894 being 28,582 tons, computed at 5*l.* 2*s.* 5*d.* per ton, as against an average value in 1895 of 7*l.* 17*s.* 5*d.* for a quantity 75 per cent. greater; while a fall of some 60 per cent. in quantity in 1896 was accompanied by a decline in value to 5*l.* 3*s.* 5*d.* per ton:—

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Bones, whether burnt or not -	Tons. 74,056	Tons. 66,681	£ 320,051	£ 251,866
Guano - - - -	49,842	20,214	392,309	104,554
Nitrate of soda (nitre, cubic) -	122,687	106,445	988,897	836,552
Phosphate of lime and rock -	359,659	291,263	633,314	465,931
Total - - -	606,244	484,603	2,334,571	1,658,903

## MISCELLANEOUS ARTICLES.

Amongst other articles of agricultural produce imported are tallow and stearine, oil seed cake, and bristles. The quantities and values received during the past two years are as follows :—

Description.	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Tallow and stearine - cwts.	2,175,822	2,049,749	£ 2,575,071	£ 2,178,652
Oil seed cakes - tons	313,618	316,071	1,603,650	1,588,214
Bristles - lbs.	3,964,750	4,056,279	556,204	555,888

## IMPORTS OF ANIMALS FROM IRELAND.

The following statement shows the number of cattle, sheep, swine, and horses imported into Great Britain from Ireland during the years 1894, 1895, and 1896 :—

Animals.	1896.	1895.	1894.
Cattle - - - - -	681,560	791,607	826,954
Sheep - - - - -	737,306	652,578	957,101
Swine - - - - -	610,589	547,220	584,967
Horses - - - - -	39,856	34,560	33,589

## PRICES OF LIVE STOCK AS RETURNED UNDER THE WEIGHING OF CATTLE ACTS.

The returns of prices obtained under the Markets and Fairs (Weighing of Cattle) Act, 1891, are now complete for the year 1896. Summaries of the statements received by the Board of Agriculture, showing the results both for the last quarter of the year and for the whole twelve months, are given accordingly in the present number of this Journal. For convenience of reference the data for the fourth quarter of 1896, as regards numbers of animals weighed and prices returned, are supplied in tabular form in the tables appended.

On these details for the quarter the only remarks that need be here offered relate to the continued increase in the number of cattle, sheep, and swine weighed in the last three months of 1896, compared with the same period of 1895 or 1894—an increase which is all the greater as the total number of cattle entering the markets was less than in either of the preceding years, and the total number of sheep and swine less than in 1895. For the ten markets selected as showing the most comparable record of values, the average prices of cattle per cwt. ranged from a minimum of 23s. 4d. at Aberdeen for inferior stock to 37s. 10d. for prime cattle in London in the quarter, while the prices were, with scarcely any exception, below those reported in the last three months of the preceding year.

Turning to the more generally interesting figures for the complete year 1896, and comparing the totals furnished with those for the three earlier years for which statistics of this nature have been collected from the 19 places scheduled for the purpose under the Act of 1891, it is apparent that the total number of cattle shown in these markets has slightly but distinctly declined since 1893, the decline being greatest in the latest year; that sheep were less numerous by half a million head; and that the swine accounted for have fluctuated in number from year to year. For every description of live stock, nevertheless, an increase is shown in the number of animals weighed alive; in those for which prices have been obtained and returned; and in those for which the prices so rendered were given with sufficient distinction of grades to render the statistics valuable for comparison.

In both sheep and swine the cases of weighing are still very few in number, but it is a mark of some progress, although not of very rapid advance, that as many as 109,000 cattle out of 1,100,000, or practically 10 per cent., were passed over the weighbridge of the 19 selected places in 1896, against only 92,000 out of 1,219,000 in 1893, while the complete price records



were furnished for 75,000 cattle in the later as compared with 57,000 at the earlier date:—

Animals.	1896.	1895.	1894.	1893.
<b>CATTLE :</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Entering markets - -	1,100,014	1,186,149	1,203,533	1,219,208
Weighed - - -	109,184	100,033	96,344	92,492
Prices returned - -	99,537	88,403	84,593	84,403
Prices returned with quality distinguished.	75,014	64,072	58,559	57,323
<b>SHEEP :</b>				
Entering markets - -	4,309,943	4,330,256	4,649,277	4,854,732
Weighed - - -	41,685	34,886	39,210	38,177
Prices returned with quality distinguished.	35,048	23,577	26,072	28,180
<b>SWINE :</b>				
Entering markets - -	232,344	233,189	139,187	191,376
Weighed - - -	4,585	2,803	2,498	1,450
Prices returned - -	1,686	1,226	523	401
Prices returned with quality distinguished.	1,686	17	56	6

As in all previous notes on these returns, it is, however, impossible to overlook the fact that the practice of weighing is much more resorted to in Scotland than in England. Comparing the last two years only for each country separately as under the English proportion of weighed animals represents only  $3\frac{1}{2}$  per cent. of those returned as shown in the markets or marts, while the Scotch proportion exceeds 29 per cent., and the rate of increase between 1896 and 1895 still continues greatest in the north:—

Cattle at Scheduled Places.	England.		Scotland.	
	1896.	1895.	1896.	1895.
	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Number entering markets -	827,869	911,652	272,145	274,497
Number as weighed - -	29,250	27,560	79,934	72,473
Number for which prices and quality were distinguished.	20,881	16,472	54,133	47,600

An examination of the general table giving each of the scheduled places shows that a local analysis might be carried much further, for, if the practice of weighing is nowhere so prevalent as in Scotland, it is favoured in very different degrees in different parts of England itself. Thus in the Metropolitan Market of London as many as 16·6 per cent. of the cattle shown now appear to have been weighed on the Corporation weigh-bridge, about 10 per cent. are weighed at Liverpool and at Shrewsbury, while, on the other hand, at Salford and at Newcastle, the two largest of the scheduled markets so far as cattle were concerned, where some 230,000 head were shown last year,

only one animal in every hundred was recorded as having been weighed. From none of the scheduled places is it reported, in 1896, that no use at all was made of the weighbridge, but the unsatisfactory extent to which the sellers of stock as a body as yet resort to the facilities which have been established for their advantage by legislative provision is apparent from such returns as those received from Ashford, Birmingham, Lincoln, or York, where the numbers of cattle weighed only ranged from 5 to 86 in the twelvemonth.

The same table shows that of 41,685 instances of sheep being weighed in 1896, four Scotch market centres supplied 31,830 cases, and eight of the English markets have no single instance to report, the English returns coming almost exclusively from the London, Liverpool, and Leeds markets. London is, however, again conspicuous for the very small per-centage of cases in which the prices of such sheep as were weighed could be ascertained, no such difficulty being apparent elsewhere.

Leeds and Newcastle have nearly the monopoly of swine weighing in England, but it is somewhat remarkable that of the weighed swine in Newcastle the prices are in each case duly reported, while in no instance has any price been returned for any of the 2,888 cases in which swine were weighed at Leeds.

So far as the prices of the fat stock furnished during the year are concerned, the following table gives the calculated average values at five English and five Scotch markets, where a fair number of quotations have been obtained, the number of these being given under each of the three customary grades to indicate the basis on which these averages rest :—

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Leeds - -	81	s. d. 3 4½	s. d. 26 10	350	s. d. 3 7½	s. d. 29 2	809	s. d. 4 0½	s. d. 32 2
Liverpool -	—	—	—	1,901	3 6½	23 4	4,523	4 0½	32 4
London - -	194	3 5½	27 8	2,273	4 1	32 8	3,295	4 7½	37 0
Newcastle -	89	3 3	23 0	203	3 9½	30 4	1,507	4 2½	33 10
Shrewsbury -	164	3 1½	25 0	274	3 9	30 0	19	4 3½	34 4
Aberdeen -	4,520	2 11½	23 8	12,278	3 11½	31 6	7,823	4 4½	34 10
Dundee -	664	3 1½	25 2	6,521	3 11	31 4	4,661	4 2½	33 6
Edinburgh -	5	3 4½	27 2	10,277	4 0½	32 6	1,496	4 2	33 4
Glasgow -	—*	—	—	1,271	3 11	31 4	1,020	4 4½	35 0
Perth - -	230	3 8½	29 10	1,326	3 11½	31 10	1,218	4 2½	33 10

\* Return of cattle of inferior grade incomplete. From one mart 134 returned with average price of 31s. 6d. per cwt.

In the lowest grade the quotations are, as formerly, much more scanty and incomplete than in the better classes, except as

regards the statistics furnished by Aberdeen and Dundee. But the data supplied indicate a range of average price per live cwt. varying from a minimum of 23s. 8d. at the former of these places, which, it may be remarked, supplies three-fourths of the available quotations, to 29s. 10d. at Perth.

In the second or medium quality cattle, where the price records are more complete, the local averages of upwards of 36,000 transactions give a range of price from 28s. 4d. per cwt. at Liverpool to 32s. 8d. per cwt. in London.

Of prime cattle, similarly, the Metropolitan quotations make the highest average for the year, or 37s. per cwt., while those from Leeds mark the lowest average, or 32s. 2d. per cwt. In Scotland the range in this category is considerably less, the highest annual average, calculated from the sales, however, of only 1,020 head of stock, reached 35s. at Glasgow, while the average of the sales of 7,823 cattle classed as prime at Aberdeen was 34s. 10d., and those of 1,496 prime cattle at Edinburgh, 33s. 4d. per cwt.

Comparing the prices of the past year as a whole with those of 1895, a continuous decline in all markets is apparent, with the exception of the quotation for second quality cattle at Liverpool, and for prime quality at Shrewsbury, where there was an upward movement of 6d. per cwt. on the year. In London the decline was 1s. per cwt. in prime stock, but it reached 1s. 10d. in those of inferior quality. At Perth the lowest grade showed a drop of 2s. per cwt., and the highest grade 2s. 1d. per cwt. The details for all the markets, for which comparisons for the two years may be given, are as under :—

PLACES.	INFERIOR or Third Quality.		GOOD or Second Quality.		PRIME or First Quality.	
	1896.	1895.	1896.	1895.	1896.	1895.
	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.	Per Cwt. s. d.
Leeds - - -	26 10	—	29 2	—	32 2	—
Liverpool - -	—	—	28 4	27 10	32 4	33 8
London - - -	27 8	29 6	32 8	34 4	37 0	38 0
Newcastle - -	26 0	—	30 4	33 0	33 10	35 4
Shrewsbury -	25 0	25 10	30 0	30 6	34 4	33 10
Aberdeen - -	23 8	25 3	31 6	32 9	34 10	36 8
Dundee - - -	25 2	27 3	31 4	33 2	33 6	35 3
Edinburgh - -	27 2	28 7	32 6	34 6	33 4	35 1
Glasgow - - -	—	33 6	31 4	35 4	35 0	36 8
Perth - - - -	29 10	31 10	31 10	33 5	33 10	35 11

In 3,593 cases during 1896 the weighbridge was used to determine the price of cattle at an agreed on rate per cwt. of live weight. Of these cases 1,019 were reported in London, while Dundee and Glasgow each reported upwards of 800 live weight transactions.



Some extension of the practice of weighing to store as well as fat cattle is reported. Shrewsbury alone furnished the greater part of these instances, or 2,612 out of 3,266. The inferior quality averaged 25s. 8d. per cwt., the second 30s. 6d., and the prime stores 34s. 6d. From Edinburgh, in 536 cases, stores are reported as weighed, while the returns indicate a few further instances at Dundee and Glasgow.

I.—ANIMALS entering, weighed, and priced at the Scheduled Places in the Fourth Quarter of 1896.

Animals.	4th Quarter, 1896.	4th Quarter, 1895.	4th Quarter, 1894.
<b>CATTLE :</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
Entering markets - - -	342,981	345,630	346,564
Weighed - - - - -	29,664	26,879	27,822
Prices returned - - -	26,146	23,342	22,500
Prices returned with quality distinguished.	20,504	17,443	16,556
<b>SHEEP :</b>			
Entering markets - - -	1,010,925	1,043,239	918,370
Weighed - - - - -	7,411	6,527	6,838
Prices returned with quality distinguished.	6,266	5,367	4,846
<b>SWINE :</b>			
Entering markets - - -	65,498	68,611	48,972
Weighed - - - - -	865	808	805
Prices returned - - -	255	240	243
Prices returned with quality distinguished.	255	11	32

II.—PRICES of FAT CATTLE at the under-mentioned Places in the Fourth Quarter of 1896.

PLACES.	INFERIOR. (3rd Quality.)			GOOD. (2nd Quality.)			PRIME. (1st Quality.)		
	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.	Number.	Price per Stone.	Price per Cwt.
Leeds - -	20	s. d. 3 4½	27 0	144	s. d. 3 6½	28 4	193	s. d. 4 0½	32 6
Liverpool -	—	—	—	731	3 5	27 4	1,871	4 0½	32 2
London - -	100	3 5½	27 10	497	3 11½	31 10	820	4 8½	37 10
Newcastle -	10	3 1½	25 0	80	3 8½	29 6	88	4 4½	35 2
Shrewsbury -	82	3 0	24 0	57	3 9	30 0	15	4 4	34 8
Aberdeen -	993	2 11	23 4	2,909	3 11½	31 8	2,744	4 5	35 4
Dundee - -	186	3 1½	25 2	1,503	3 11½	31 8	1,034	4 4	34 8
Edinburgh -	3	3 6½	28 6	3,329	4 0	32 0	179	4 4½	35 0
Glasgow -	52	3 11	31 4	483	3 8½	29 10	252	4 5½	35 8
Perth - -	69	3 7½	29 2	229	4 0½	32 2	249	4 3½	34 6

**Cattle, Sheep, and Swine**, entering the **MARKETS** and **MARTS** of the under-mentioned Places with the number **WEIGHED**, as received from the Market Authorities in the **Fourth Quarter 1896**, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
— ENGLAND.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Ashford - -	4,130	5	—	23,199	—	—	7,640	—	—
Birmingham - -	6,651	3	3	17,879	—	—	2,010	3	—
Bristol - - -	14,674	27	27	19,711	—	—	—	—	—
Leicester - - -	15,552	387	323	26,532	214	48	2,999	29	29
Leeds - - -	8,129	357	357	26,330	—	—	2,911	607	—
Lincoln - - -	2,478	3	3	16,815	—	—	3,458	9	9
Liverpool - - -	26,997	2,602	2,602	66,159	329	329	—	—	—
London - - -	26,660	4,083	1,417	134,940	802	—	2,140	—	—
Newcastle-upon-Tyne	28,040	178	178	76,234	—	—	14,571	125	125
Norwich - - -	37,046	73	73	30,261	—	—	6,650	—	—
Salford - - -	39,389	191	191	97,415	—	—	1,658	—	—
Shrewsbury - - -	11,443	1,033	817	12,530	—	—	3,577	—	—
Wakefield - - -	18,913	36	—	33,433	—	—	2,841	—	—
York - - -	21,465	24	22	64,460	—	—	3,496	—	—
SCOTLAND.									
Aberdeen - - -	18,189	6,646	6,646	30,775	3,580	3,550	4,048	—	—
Dundee - - -	4,137	2,776	2,748	6,954	1,001	1,001	879	—	—
Edinburgh - - -	21,869	7,837	*3,763	67,023	—	—	2,028	—	—
Glasgow - - -	20,634	1,147	787	149,780	185	38	2,623	—	—
Perth - - -	16,535	2,256	*247	105,495	1,300	1,300	2,569	92	92
TOTAL for ENGLAND	261,567	9,002	6,013	650,898	1,345	377	53,351	773	163
TOTAL for SCOTLAND	81,414	20,662	*14,491	360,027	6,066	5,889	12,147	92	92
<b>Total - - -</b>	342,981	29,664	*20,504	1,010,925	7,411	6,266	65,498	865	255

\* Prices for 3,933 cattle in addition to the above were quoted from Edinburgh, and for 1,709 cattle from Perth, but without distinguishing the quality.

**Cattle, Sheep, and Swine**, entering the **MARKETS** and **MARTS** of the under-mentioned Places with the Number **WEIGHED**, as received from the Market Authorities in the **Year 1896**, under the Markets and Fairs (Weighing of Cattle) Act, 1891 (54 & 55 Vict. c. 70.).

PLACES.	Cattle.			Sheep.			Swine.		
	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.	Total Number entering the Markets or Marts.	Number Weighed.	Number Weighed for which Prices were given.
<b>ENGLAND.</b>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Ashford - - -	12,174	20	10	90,871	—	—	25,770	7	—
Birmingham - - -	26,713	5	5	97,405	—	—	6,267	3	—
Bristol - - -	46,339	108	103	112,040	—	—	36	—	—
Leicester - - -	56,407	977	745	88,420	512	158	9,845	58	58
Leeds - - -	31,651	1,240	1,240	133,175	1,289	1,289	13,220	2,888	—
Lincoln - - -	8,234	24	22	65,173	—	—	13,300	9	9
Liverpool - - -	66,360	6,424	6,424	334,413	2,087	2,087	—	—	—
London - - -	79,755	13,262	5,762	642,240	5,873	212	5,325	—	—
Newcastle-upon-Tyne	101,461	1,799	1,799	328,681	—	—	39,612	1,152	1,152
Norwich - - -	93,141	352	352	217,633	40	40	30,747	—	—
Salford - - -	128,857	928	928	595,614	54	54	2,946	—	—
Shrewsbury - - -	36,275	3,634	3,069	48,791	—	—	15,349	—	—
Wakefield - - -	74,724	391	345	185,107	—	—	18,614	—	—
York - - -	65,778	86	77	156,091	—	—	7,264	1	1
<b>SCOTLAND.</b>									
Aberdeen - - -	63,398	24,621	24,621	186,031	19,430	19,295	17,058	—	—
Dundee - - -	17,498	12,023	11,957	24,115	4,406	4,310	2,561	6	6
Edinburgh - - -	68,217	27,396	*12,314	241,334	—	—	6,654	—	—
Glasgow - - -	64,514	3,349	2,432	489,037	913	552	9,305	19	18
Perth - - -	58,518	12,545	*2,809	273,772	7,081	7,051	8,471	442	442
<b>TOTAL for ENGLAND</b>	827,869	29,250	20,881	3,095,654	9,855	3,849	188,295	4,118	1,220
<b>TOTAL for SCOTLAND</b>	272,145	79,934	*54,133	1,214,239	31,830	31,208	44,049	467	466
<b>Total - - -</b>	1,100,014	103,184	*75,014	4,309,943	41,685	35,048	232,344	4,585	1,686

\* Prices for 14,787 cattle in addition to the above were quoted from Edinburgh, and for 9,736 cattle from Perth, but without distinguishing the quality.



### PRICES OF MEAT, CORN, AND DAIRY PRODUCE.

### I.—PRICES OF MEAT.

AVERAGE PRICES of DEAD MEAT, per Stone of 8 lbs., at the LONDON CENTRAL MEAT MARKET, during the Fourth Quarter of 1896, with the Average Price for the Year.

(Compiled from the prices quoted weekly in the "Meat Trades Journal.")

DESCRIPTION.	4TH QUARTER, 1896.	AVERAGE for the YEAR.
<b>BEEF :—</b>	<i>s. d. s. d.</i>	<i>s. d. s. d.</i>
Scotch, short sides - -	4 1 to 4 4	4 0 to 4 4
„ long sides - -	3 8 „ 3 11	3 7 „ 3 10
English, Prime - -	3 6 „ 3 8	3 6 „ 3 9
Cows and Bulls - -	2 0 „ 2 8	1 10 „ 2 8
American, Birkenhead killed	3 0 „ 3 4	2 11 „ 3 3
„ Deptford killed -	3 1 „ 3 5	2 11 „ 3 3
„ Refrig. hind-qrs. -	3 3 „ 3 7	3 2 „ 3 7
„ „ fore-qrs. -	2 0 „ 2 3	1 10 „ 2 1
Australian, Refrig. hind-qrs. -	1 7 „ 1 9	1 8 „ 1 10
„ „ fore-qrs. -	1 4 „ 1 5	1 3 „ 1 4
<b>MUTTON :—</b>		
Scotch, Prime - -	4 0 „ 4 5	4 2 „ 4 7
English, Prime - -	3 9 „ 4 3	3 10 „ 4 4
Ewes - -	2 7 „ 3 0	2 9 „ 3 3
Continental - -	3 0 „ 3 5	3 5 „ 3 10
New Zealand - -	2 0 „ 2 6	1 11 „ 2 5
Australian - -	1 8 „ 1 10	1 7 „ 1 8
River Plate, Frozen - -	1 8 „ 1 10	1 7 „ 1 9
„ „ Town killed -	2 9 „ 3 1	3 0 „ 3 3
<b>LAMB :—</b>		
English - -	— —	5 1 „ 6 1
New Zealand - -	2 3 „ 2 8	2 9 „ 3 3
<b>VEAL :—</b>		
English - -	4 0 „ 4 6	4 0 „ 4 8
Foreign - -	3 3 „ 4 0	3 4 „ 3 11
<b>PORK :—</b>		
English, small - -	3 0 „ 3 5	3 0 „ 3 5
„ medium and large -	} 2 6 „ 2 10	2 5 „ 2 11
Foreign - -		

I.—PRICES OF MEAT—*continued.*

AVERAGE WHOLESALE PRICES of CATTLE and SHEEP, per Stone of 8 lbs., sinking the Offal, at the METROPOLITAN CATTLE MARKET, during each Quarter of 1896, with the Mean Prices for the Year.

PERIOD.	CATTLE.			SHEEP.		
	Inferior.	Second.	First.	Inferior.	Second.	First.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1st Quarter 1896	2 4	3 10	4 5	3 4	5 2	5 8
2nd Quarter „	2 4	3 8	4 4	3 3	4 9	5 3
3rd Quarter „	2 4	3 9	4 4	3 2	4 8	5 4
4th Quarter „	2 4	3 9	4 6	3 2	4 10	5 5
Mean of the Year	2 4	3 9	4 5	3 3	4 10	5 5

AVERAGE WHOLESALE PRICES of BEEF and MUTTON, per Stone of 8 lbs., by the Carcase, at LIVERPOOL and GLASGOW, during each Quarter of 1896, with the Mean Prices for the Year.

PERIOD.	LIVERPOOL.*				GLASGOW.†			
	BEEF.		MUTTON.		BEEF.		MUTTON.	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
1st Quarter 1896	2 0 to 3	2 2	3 0 to 4	10	2 8 to 3	8	3 0 to 4	6
2nd Quarter „	2 0 „	3 4	3 0 „	5 0	2 4 „	3 6	3 8 „	4 10
3rd Quarter „	2 6 „	3 4	3 4 „	4 10	2 4 „	3 8	3 4 „	4 6
4th Quarter „	2 2 „	3 6	2 8 „	4 6	2 0 „	3 8	3 0 „	4 4
Mean of the Year	2 2 „	3 4	3 0 „	4 9	2 4 „	3 7	3 3 „	4 6

\* Compiled from information furnished by the Medical Officer of Health, Liverpool. The prices quoted are for Carcases of Animals slaughtered at the *Liverpool Abattoir*, and do not apply to Imported Meat.

† Compiled from information furnished by the Principal of the Veterinary College, Glasgow.

I.—PRICES OF MEAT—*continued.*

## BERLIN MARKET.

AVERAGE PRICES of CATTLE and SHEEP (First Quality) in the BERLIN CATTLE MARKET in the under-mentioned months of 1896, with the Mean Prices for the Year.

MONTHS.	CATTLE.				SHEEP.					
	Per Cwt.				Per Cwt.					
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>		
October - - - -	56	5	to	59	8	50	4	to	53	9
November - - -	58	3	„	61	1	46	4	„	50	2
December - - -	59	1	„	62	1	43	5	„	46	10
Mean of the Year - - -	56	10	„	59	9	46	1	„	49	4

NOTE.—The above prices have been compiled from the weekly returns published in the *Deutsche Landwirtschaftliche Presse*.

## PARIS MARKET.

AVERAGE PRICES of CATTLE, SHEEP, and SWINE (Medium Quality) in the PARIS CATTLE MARKET in the under-mentioned months of 1896, with the Mean Prices for the Year.

MONTHS.	OXEN.		CALVES.		SHEEP.		PIGS.	
	Per Cwt.		Per Cwt.		Per Cwt.		Per Cwt.	
LIVE WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
October - -	32	9	36	5	40	6	27	8
November - -	32	7	35	10	41	0	26	9
December - -	32	8	36	9	40	1	28	2
Mean of the Year -	32	9	39	1	41	0	29	10
DEAD WEIGHT.								
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
October - -	56	6	68	3	72	4	41	3
November - -	55	7	61	4	69	10	40	6
December - -	56	2	66	0	69	3	40	10
Mean of the Year -	57	7	70	1	73	8	43	9

NOTE.—The above prices have been compiled from the weekly returns published in the *Journal d'Agriculture pratique*.



I.—PRICES OF MEAT—*continued.*

## CHICAGO.

PRICES of CATTLE at CHICAGO per Cwt. (Live Weight) in the under-mentioned months of 1896, with the Mean Prices for the Year.

Months.	Good Dressed Beef and Shipping Steers.		Export Cattle.		Extra Prime Cattle.	
1896.	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>
October - -	18 0	to 22 2	17 9	to 23 4	23 4	to 24 9
November -	19 10	„ 22 10	18 8	„ 23 10	24 0	„ 25 0
December -	18 0	„ 23 10	18 8	„ 25 2	23 4	„ 27 6
Mean of the Year	18 2	„ 21 1	18 7	„ 21 10	21 7	„ 23 2

Compiled from the Live Stock Reports issued by Messrs. Clay, Robinson, & Co., of the Union Stock Yards, Chicago, Illinois.

AVERAGE VALUES, per Cwt., of various Kinds of DEAD MEAT Imported into the United Kingdom from FOREIGN COUNTRIES and BRITISH POSSESSIONS in each Quarter of 1896, with the Average Value for the Year.

(Computed from the Trade and Navigation Accounts.)

PERIOD.	BEEF.		MUTTON.	PORK.		BACON.	HAMS.
	Fresh.	Salted.	Fresh.	Fresh.	Salted.		
1st Quarter 1896 -	<i>s.</i> 37 7	<i>d.</i> 26 0	<i>s.</i> 33 2	<i>s.</i> 45 7	<i>d.</i> 25 11	<i>s.</i> 33 3	<i>d.</i> 41 9
2nd Quarter „ -	38 7	24 10	32 6	46 5	21 6	35 1	41 6
3rd Quarter „ -	38 5	23 6	33 7	47 0	20 5	34 5	43 1
4th Quarter „ -	36 11	23 8	31 3	45 7	22 10	35 6	45 7
The Year - -	37 10	24 7	32 7	45 11	22 10	34 6	43 0

## II.—CORN PRICES :—QUARTERLY AVERAGES.

AVERAGE PRICES of **British Corn** per Quarter of 8 imperial bushels,\* computed from the Weekly Averages of Corn Returns from the 196 Returning Markets of ENGLAND AND WALES, pursuant to the Corn Returns Act, 1882, together with the QUANTITIES returned as sold at such Markets, in the under-noted periods of the Years 1896, 1895, and 1894.

QUARTER ENDED	PRICES.			QUANTITIES.		
	1896.	1895.	1894.	1896.	1895.	1894.
<b>Wheat.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	25 8	20 1	25 1	448,047	652,874	613,313
Midsummer - -	25 2	23 1	24 4	384,559	496,615	429,450
Michaelmas - -	23 7	23 11	22 11	505,988	361,223	313,288
Christmas - -	30 5	25 1	19 2	772,427	417,671	600,773
<b>Barley.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	22 5	21 6	28 1	955,902	1,035,588	671,620
Midsummer - -	21 4	20 3	25 2	92,739	79,936	40,863
Michaelmas - -	21 0	21 3	22 1	165,722	141,985	95,121
Christmas - -	27 1	24 10	22 7	2,177,499	2,169,067	1,921,744
<b>Oats.</b>						
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>Quarters.</i>	<i>Quarters.</i>	<i>Quarters.</i>
Lady Day - -	13 9	13 9	18 1	259,565	250,838	193,922
Midsummer - -	14 3	15 2	18 7	99,672	111,424	61,862
Michaelmas - -	14 6	15 1	17 11	94,383	88,312	70,824
Christmas - -	16 7	13 10	13 10	201,533	215,365	239,139

\* Section 8 of the Corn Returns Act, 1882, provides that where returns of purchases of British Corn are made to the local inspector of Corn Returns in any other measure than the imperial bushel or by weight or by a weighed measure, that officer shall convert such returns into the imperial bushel, and in the case of weight or weighed measure the conversion is to be made at the rate of 60 imperial pounds for every bushel of wheat, 50 imperial pounds for every bushel of barley, and 39 imperial pounds for every bushel of oats.

## II.—CORN PRICES :—WEEKLY AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Returns received under the Corn Returns Act, 1882, in each of the under-mentioned Weeks in 1897, and in the Corresponding Weeks in 1896 and 1895.

Weeks ended (in 1896)	Wheat.			Barley.			Oats.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
Jan. 2 -	s. d. 30 6	s. d. 25 2	s. d. 20 4	s. d. 24 8	s. d. 24 7	s. d. 21 5	s. d. 16 2	s. d. 13 10	s. d. 14 2
" 9 -	31 1	25 4	20 8	25 5	23 11	21 3	16 3	13 9	13 9
" 16 -	31 8	25 10	20 8	24 10	23 6	21 8	16 5	13 11	14 0
" 23 -	31 7	26 1	20 9	25 5	23 7	21 11	16 6	13 10	13 10
" 30 -	31 3	26 3	20 6	24 7	23 1	21 5	16 8	14 1	13 10
Feb. 6 -	30 7	26 4	19 11	24 10	22 5	21 8	16 7	14 0	13 6
" 13 -	29 8	26 7	19 10	24 8	21 11	21 10	16 6	14 0	13 8
" 20 -	28 11	23 3	19 10	23 9	21 10	22 2	16 5	13 9	13 9
" 27 -	28 2	25 6	19 10	23 8	21 10	21 9	16 3	13 10	14 0

## II.—CORN PRICES :—ANNUAL AVERAGES.

AVERAGE PRICES of **British Corn**, per Quarter of 8 imperial bushels, computed from the Weekly Averages of Corn Returns from the 196 Returning Markets, together with the QUANTITIES returned as sold at such Markets during each of the Years 1892 to 1896.

YEARS.	PRICES.			QUANTITIES.		
	Wheat.	Barley.	Oats.	Wheat.	Barley.	Oats.
1892 - - -	s. d. 30 3	s. d. 26 2	s. d. 19 10	Quarters. 3,052,879	Quarters. 3,493,634	Quarters. 492,166
1893 - - -	26 4	25 7	18 9	2,620,060	3,366,056	575,522
1894 - - -	22 10	24 6	17 1	1,956,824	2,729,348	565,747
1895 - - -	23 1	21 11	14 6	1,928,383	3,426,576	665,939
1896 - - -	26 2	22 11	14 9	2,111,021	3,391,862	655,153



## II.—CORN PRICES:—IMPORTED WHEAT.

AVERAGE VALUE per IMPERIAL QUARTER of WHEAT IMPORTED into the UNITED KINGDOM from the under-mentioned Foreign Countries and British Possessions in the Fourth Quarter of 1896, with the Average Price for the Year.

COUNTRIES from which Exported.	Average Value per Imperial Quarter.	
	Fourth Quarter, 1896.	The Year.
	<i>s. d.</i>	<i>s. d.</i>
ARGENTINE REPUBLIC - - - -	27 6	25 1
CHILE - - - - -	27 9	26 4
ROUMANIA - - - - -	29 6	26 11
RUSSIA - - - - -	30 5	25 9
TURKEY - - - - -	30 0	26 10
UNITED STATES OF AMERICA { Atlantic	30 11	27 2
{ Pacific	33 6	27 0
INDIA, BRITISH - - - -	31 5	25 4
NORTH AMERICA, BRITISH - - -	29 2	25 11

## II.—CORN PRICES:—BELGIUM, FRANCE AND ENGLAND.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER in BELGIUM, FRANCE, and ENGLAND AND WALES in the under-mentioned months of 1896 and 1897.

MONTH.	BELGIUM.	FRANCE.	ENGLAND.
WHEAT.			
	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
1896.			
October - - - - -	28 1	31 1	27 10
November - - - - -	31 2	31 8	32 4
December - - - - -	29 9	33 11	31 8
1897.			
January - - - - -	—	34 11	31 2
BARLEY.			
	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
1896.			
October - - - - -	20 11	20 4	28 10
November - - - - -	21 11	21 0	27 0
December - - - - -	21 4	21 8	25 1
1897.			
January - - - - -	—	21 10	24 11
OATS.			
	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>	Per Qr. <i>s. d.</i>
1896.			
October - - - - -	17 11	17 5	15 9
November - - - - -	18 8	17 2	17 6
December - - - - -	18 0	17 5	16 7
1897.			
January - - - - -	—	17 7	16 4

*Note.*—The prices of Belgian grain are the official monthly averages published in the *Moniteur Belge*. The prices of French grain have been compiled from the official weekly averages published in the *Journal d'Agriculture pratique*. The prices of British grain are official averages based on the weekly returns furnished under the Corn Returns Act, 1882.

## II.—CORN PRICES:—LONDON, PARIS, BERLIN.

AVERAGE PRICES of WHEAT, BARLEY, and OATS per IMPERIAL QUARTER at the under-mentioned Markets in the last three months of 1896, with the Mean Prices for the Year.

MONTH.	LONDON.	PARIS.	BERLIN.
WHEAT.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	27 9	31 9	35 8
November - - -	32 9	32 7	37 8
December - - -	33 11	34 5	37 9
Mean of the Year - - -	27 1	31 6	34 0
BARLEY.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	32 6	22 8	20 9 to 23 10
November - - -	28 1	20 4	21 1 „ 24 7
December - - -	24 4	21 6	21 1 „ 24 7
Mean of the Year - - -	25 11	20 2	20 4 „ 23 2
OATS.			
1896.	Per Qr. s. d.	Per Qr. s. d.	Per Qr. s. d.
October - - -	17 9	17 6	18 7
November - - -	18 5	17 9	19 0
December - - -	17 2	17 10	18 6
Mean of the Year - - -	16 1	17 8	17 8

*Note.*—The London quotation represents the price of British corn as returned under the Corn Returns Act, 1882; the price of grain in Paris is the official average price of French wheat in that city; the quotations shown for Berlin represent the prices of grain of good merchantable quality.

## III.—PRICES OF BUTTER, MARGARINE, AND CHEESE.

MEAN WHOLESALE PRICES of BUTTER, MARGARINE, and CHEESE,  
in the months of December 1896 and January 1897, and  
in the Fourth Quarter of 1896.

(Compiled from the *Grocer*.)

DESCRIPTION.	4th Quarter of 1896.			Month of December 1896.			Month of January 1897.		
	Per Cwt.			Per Cwt.			Per Cwt.		
	s.	d.	s. d.	s.	d.	s. d.	s.	d.	s. d.
BUTTER :									
Cork, 1sts -	107	0	—	112	0	—	116	0	—
„ 2nds -	94	0	—	101	0	—	112	0	—
„ 3rds -	80	0	—	79	0	—	93	0	—
„ 4ths -	62	0	—	55	0	—	66	0	—
Friesland -	97	0 to 100	0	94	0 to 97	0	100	0 to 104	0
Dutch Factories -	101	0 „	106 0	99	0 „	103 0	105	0 „	108 0
French Baskets -	104	0 „	112 0	105	0 „	113 0	114	0 „	123 0
„ Crocks and Firkins.	92	0 „	101 0	93	0 „	102 0	104	0 „	110 0
„ 2nds and 3rds	82	0 „	89 0	84	0 „	89 0	92	0 „	100 0
Danish and Swedish	115	0 „	120 0	115	0 „	119 0	113	0 „	117 0
Finnish -	95	0 „	109 0	95	0 „	108 0	95	0 „	108 0
Russian -	84	0 „	95 0	83	0 „	94 0	84	0 „	94 0
Australian -	98	0 „	110 0	90	0 „	108 0	84	0 „	107 0
Canadian and States	52	0 „	101 0	50	0 „	97 0	57	0 „	99 0
Fresh Rolls (Foreign) per doz.	10	6 „	15 0	10	6 „	15 6	11	6 „	16 0
MARGARINE :									
Margarine -	26	0 „	54 0	26	0 „	54 0	26	0 „	54 0
Mixtures -	52	0 „	74 0	50	0 „	74 0	49	0 „	74 0
CHEESE :									
Cheddar -	62	0 „	78 0	64	0 „	78 0	65	0 „	80 0
Somerset -	62	0 „	68 0	66	0 „	70 0	67	0 „	72 0
Cheshire -	66	0 „	81 0	70	0 „	84 0	72	0 „	84 0
Wiltshire -	62	0 „	66 0	65	0 „	68 0	67	0 „	69 0
Double Gloucester -	58	0 „	65 0	59	0 „	66 0	64	0 „	69 0



## PRICES OF VEGETABLES AND FRUIT.

## I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle*.)

DESCRIPTION.	DECEMBER, 1896.		JANUARY, 1897.	
COVENT GARDEN :	s.	d.	s.	d.
Artichokes, Globe, per dozen - -	2	6 to 6	3	0 to 6
"    Chinese, per lb. - -	0	3 " 0	0	3 " —
Beans, French, Channel Islands, per lb.	1	0 " 1	1	6 " 1
"    Kidney, Madeira, per basket, (8-10 lbs.)	2	6 " 4	1	3 " 4
Cauliflowers, per tally of 5 dozen -	5	0 " 7	—	—
"    Cherbourg, per dozen -	2	0 " 3	1	3 " 1
"    Cornwall, per crate -	—	" —	11	0 " —
"    St. Malo, per dozen -	3	0 " 4	1	0 " 2
Cucumbers, home-grown, selected, per dozen.	6	0 " 10	6	0 " 12
Mushrooms, indoor, per lb. - -	0	3 " 0	0	4 " 0
"    French, " - -	0	4 " 0	—	—
Potatoes:—				
Dunbar Main Crop, per ton - -	95	0 " 100	—	—
Blacklands, per ton - -	40	0 " —	—	—
Kidney, Channel Islands, per lb. -	—	" —	0	5 " 0
"    French, per lb. - -	—	" —	0	2 " 0
Lincoln, per ton - -	75	0 " 85	0	— " —
Rhubarb, forced, per dozen - -	—	" —	0	9 " 1
Sea Kale, per punnet, 3½-4 lbs. weight -	0	10 " 1	0	10 " 1
LIVERPOOL:				
Cabbages, per dozen - -	0	6 " 1	0	6 " 1
Carrots, per cwt. - -	2	6 " 3	2	6 " 3
"    per dozen bunches - -	0	6 " 0	—	—
Cauliflowers, per dozen - -	1	0 " 3	1	6 " 3
Celery, per dozen heads - -	0	8 " 1	0	8 " 2
Cucumbers, each - -	—	" —	1	0 " —
Mushrooms, per lb. - -	1	3 " —	1	0 " 1
Onions, English, per cwt. - -	3	6 " 4	4	0 " 4
"    foreign, " - -	2	6 " 3	2	6 " 3
Parsley, per dozen bunches - -	0	4 " 0	0	6 " 0
Potatoes:—				
Bruces, per cwt. - -	1	9 " 2	1	8 " 2
Champions, " - -	1	8 " 2	1	8 " 2
Giants, " - -	1	8 " 2	1	6 " 3
Imperators, " - -	1	8 " 2	1	6 " 2
Main Crop, " - -	2	0 " 3	2	2 " 2
Swedes, " - -	1	0 " 1	1	0 " 1
Turnips, per dozen bunches - -	0	6 " 0	0	6 " 1
"    per ton - -	17	6 " 20	19	0 " 20

PRICES OF VEGETABLES AND FRUIT—*continued.*I.—MONTHLY MEAN PRICES (WHOLESALE) OF VEGETABLES at the under-mentioned MARKETS—*continued.*(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	DECEMBER, 1896.		JANUARY, 1897.	
	s.	d.	s.	d.
GLASGOW :				
Artichokes, per cwt. - - -	10	0 to 14 0	10	0 to 12 0
Beetroot, per dozen - - -	0	6 „ 0 7	0	6 „ 0 7
Broccoli, „ - - -	3	0 —	2	0 „ 3 0
Cabbages, „ - - -	0	6 „ 0 9	0	6 „ 0 8
„ late, per dozen - - -	0	10 „ 1 6	0	10 „ 1 0
„ red, „ - - -	2	6 „ 3 0	2	6 „ 3 0
Carrots, per cwt. - - -	2	6 „ 4 6	2	6 „ 4 6
Cauliflowers, Dublin, per dozen - - -	2	0 „ 2 6	2	0 „ 2 6
„ English, „ - - -	—	—	2	0 „ 2 9
Celery, common, per bundle - - -	0	9 „ 1 0	0	9 „ 1 0
„ table, „ - - -	1	0 „ 2 4	1	0 „ 2 4
Cress, per basket - - -	0	3 —	0	3 —
Cucumbers, per dozen - - -	4	0 „ 12 0	6	0 „ 12 0
Endive, „ - - -	1	6 „ 2 0	1	6 „ 2 0
Greens, per bunch - - -	0	3 „ 0 4	0	3 „ 0 4
Herbs, assorted, per bunch - - -	0	1 „ 0 2	0	1 „ 0 2
Horseradish, per bundle - - -	2	0 „ 3 0	2	0 „ 2 6
Leeks, per dozen bunches - - -	1	3 „ 3 6	1	3 „ 3 6
Lettuces, per dozen - - -	0	6 „ 0 9	0	6 „ 0 9
„ Cos, per dozen - - -	0	9 —	—	—
„ French, „ - - -	0	9 „ 1 0	0	9 „ 1 0
Mint, per bunch - - -	0	2 „ 0 6	0	6 —
Mushrooms, per lb. - - -	1	0 „ 1 3	1	0 „ 1 3
Onions, globe, per cwt. - - -	3	0 „ 3 6	2	0 „ 3 6
„ Portugal, per stone - - -	1	0 —	1	0 —
Parsley, per cwt. - - -	5	0 „ 6 0	5	0 „ 6 0
Parsnips, „ - - -	4	0 „ 4 6	4	0 „ 4 6
Radishes, per dozen bunches - - -	0	9 „ 1 0	0	6 —
Rhubarb, per cwt. - - -	—	—	1	9 „ 2 0
Savoys, per dozen - - -	1	0 „ 1 3	1	0 „ 1 3
Sprouts, Brussels, per stone - - -	1	3 „ 1 9	1	3 „ 1 9
Swedes, per cwt. - - -	1	0 „ 1 2	1	0 —
Turnips, white, per dozen bunches - - -	2	0 „ 2 6	2	0 „ 2 6

PRICES OF VEGETABLES AND FRUIT—*continued.*

## II.—MONTHLY MEAN PRICES (WHOLESALE) of FRUIT at the under-mentioned MARKETS.

(Compiled from the *Gardeners' Chronicle.*)

DESCRIPTION.	DECEMBER, 1896.	JANUARY, 1897.
COVENT GARDEN :	<i>s. d.</i> <i>s. d.</i>	<i>s. d.</i> <i>s. d.</i>
Apples, Blenheims, per sieve - -	5 0 to 6 0	5 0 to 7 0
"    Wellingtons,   "    - -	5 0   "    6 0	5 0   "    8 0
"    ordinary kinds,   "    - -	2 0   "    3 0	2 0   "    3 0
Grapes, Alicante, 1st quality, per lb. -	1 3   "    1 9	1 3   "    2 0
"    "    2nd   "    "    - -	0 10   "    1 2	1 0   "    1 2
"    Gros Colmar, selected,   "    - -	1 9   "    2 0	1 9   "    2 6
"    "    2nd quality, per lb. -	1 0   —	1 3   "    1 6
"    Muscats, English, 1st quality, per lb. -	3 6   "    4 6	3 6   "    5 6
"    "    "    2nd quality, per lb. -	2 0   "    2 6	2 0   "    3 6
Nuts, cob, per 100 lbs. - -	30 0   "    65 0	50 0   "    60 0
Pineapples, St. Michael, each - -	1 6   "    8 6	3 0   "    5 0
Tomatoes, home-grown, smooth, per dozen lbs. -	3 0   "    3 6	—   —
"    ordinary kinds, per dozen lbs. -	1 6   "    2 0	—   —
"    Canary Islands, per case (about 12 lbs.) -	3 0   "    5 6	3 0   "    5 6
LIVERPOOL :		
Grapes, English, per lb. - -	2 0   "    4 0	1 6   "    3 6
"    foreign,   "    - -	0 6   "    0 8	0 6   "    0 8
Pineapples, English, each - -	4 0   "    8 0	4 0   "    10 6
"    foreign,   "    - -	1 6   "    2 6	4 0   "    6 6
GLASGOW :		
Apples, per stone - -	1 0   "    2 6	1 0   "    2 0
Grapes, foreign, per lb. - -	0 4   "    0 6	0 4   "    0 8
"    home,   "    - -	1 0   "    2 0	1 0   "    3 0
Pears, per lb. - -	0 5   "    0 6	0 6   "    0 8
Tomatoes, Guernsey, per lb. - -	0 3   "    0 5	0 6   —
"    Scotch,   "    - -	0 6½   —	0 6½   "    0 10



## PRICES OF WOOL.

AVERAGE PRICES OF ENGLISH WOOL, per pack of 240 lbs., in  
the Year 1896 and the month of January 1897.

(Compiled from the *Economist*.)

DESCRIPTION.	THE YEAR 1896.				JANUARY, 1897.			
	£	s.	£	s.	£	s.	£	s.
South Down - - -	9	3 to	11	4	9	0 to	11	0
Half breds - - -	9	3 „	10	15	9	0 „	10	3
Leicester - - -	9	13 „	10	19	9	0 „	10	10
Kent Fleeces - - -	9	5 „	10	11	9	0 „	10	3

## DISEASES OF ANIMALS.

## I.—DISEASES OF ANIMALS IN GREAT BRITAIN.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia**, and of  
**Swine-Fever**, with the Number of CATTLE and SWINE  
Slaughtered by order of the Board of Agriculture, in  
Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUTBREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	OUTBREAKS Confirmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
September 1895 -	No. —	No. —	No. —	No. 1,578	No. 18,293
December 1895 -	—	—	—	1,787	26,958
March 1896 -	1	8	78	1,524	19,596
June 1896 -	1	1	105	1,723	24,855
September 1896 -	—	—	—	1,104	19,329
December 1896 -	—	—	—	815	15,806

NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Great Britain in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
September 1895	86	178	284	449	125	19
December 1895	115	201	197	359	134	9
March 1896 -	156	266	193	321	200	10
June 1896 -	106	214	177	303	127	11
September 1896	108	205	234	339	66	—
December 1896	124	224	222	343	42	1

## II.—DISEASES OF ANIMALS IN IRELAND.

NUMBER of OUTBREAKS of **Pleuro-Pneumonia**, and of **Swine-Fever**, with the Number of CATTLE and SWINE slaughtered by order of the Lord Lieutenant and Privy Council in Ireland, in each of the under-mentioned periods.

QUARTER ENDED	Pleuro-Pneumonia.			Swine-Fever.	
	OUT- BREAKS Confirmed.	CATTLE found Diseased.	CATTLE Slaughtered as having been exposed to Infection.	OUT- BREAKS Con- firmed.	SWINE Slaughtered as Diseased, or as having been exposed to Infection.
	No.	No.	No.	No.	No.
September 1895 -	—	—	—	788	1,240
December 1895 -	—	—	—	165	625
March 1896 -	—	—	—	267	1,508
June 1896 -	—	—	—	241	1,614
September 1896 -	—	—	—	162	850
December 1896 -	—	—	—	60	2,794

NUMBER of OUTBREAKS reported as having taken place, and Number of ANIMALS returned as having been ATTACKED by ANTHRAX, GLANDERS, and RABIES in Ireland in each of the under-mentioned periods.

QUARTER ENDED	Anthrax.		Glanders (including Farcy).		Rabies.	
	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	OUT- BREAKS REPORTED.	ANIMALS ATTACKED.	CASES REPORTED.	
					DOGS.	OTHER ANIMALS.
	No.	No.	No.	No.	No.	No.
September 1895	1	1	—	—	162	58
December 1895	—	—	—	—	101	37
March 1896 -	—	—	4	6	156	33
June 1896 -	1	1	—	—	150	86
September 1896	—	—	3	4	114	50
December 1896	—	—	—	1	74	29

## POST OFFICE SAVINGS BANKS, WITH GOVERNMENT SECURITY

### ADVANTAGES OFFERED FOR OLD AGE PENSIONS.

Provision for old age can be made by buying Savings Bank Deferred Annuities from 1*l*. to 100*l*. to begin at any age selected.

**RETURN OF PURCHASE MONEY.** The Premiums for Deferred Annuities can be returned on application, or on Death before the Annuity begins, if the Contract is taken out on these conditions.

**IMMEDIATE PENSIONS.** Annuities to begin at once, of any amount from 1*l*. to 100*l*. a year, can be bought through the Post Office Savings Bank. The Purchase Money is payable in a lump sum which is not returnable, and the Pensions are payable half-yearly.

Savings Banks Annuities are payable by half-yearly instalments on the 5th January and the 5th July, or the 5th April and 10th October, according to the date of purchase.

**PROCEDURE.** A simple form of Proposal, and a form for statement of age, can be obtained at any Post Office Savings Bank. When filled up the forms will be forwarded by the local Postmaster to the Chief Office, London, and a Contract will be issued when the first premium has been paid. Annuity Premiums are payable in the same way as Insurance Premiums, namely, by transfers from Savings Bank accounts.

The following Table shows the cost of an Immediate Life Annuity of £1, and the annual or single premium for which a Deferred Life Annuity of £1 will be granted.



## OLD AGE PENSIONS.—IMMEDIATE LIFE ANNUITIES.

This Table shows the cost of an Immediate Life Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below.

AGE			Males.	Females.	AGE			Males.	Females.
at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.	at time of Purchase.			Cost of an Immediate Annuity of £1.	Cost of an Immediate Annuity of £1.
			£ s. d.	£ s. d.				£ s. d.	£ s. d.
5 and under	6		25 19 0	27 12 6	44 and under	45		16 15 8	18 13 3
6	7		25 15 1	27 9 1	45	46		16 9 11	18 6 9
7	8		25 11 1	27 5 8					
8	9		25 7 0	27 2 2	46	47		16 4 2	18 0 0
9	10		25 2 11	26 18 8	47	48		15 18 3	17 13 2
10	11		24 18 10	26 15 1	48	49		15 12 3	17 6 1
					49	50		15 6 1	16 18 11
11	12		24 14 9	26 11 6	50	51		14 19 11	16 11 9
12	13		24 10 6	26 7 10					
13	14		24 6 4	26 4 1	51	52		14 13 6	16 4 7
14	15		24 2 1	26 0 4	52	53		14 7 1	15 17 4
15	16		23 17 10	25 16 6	53	54		14 0 5	15 9 11
					54	55		13 13 8	15 2 4
16	17		23 13 6	25 12 7	55	56		13 6 9	14 14 9
17	18		23 9 1	25 8 8					
18	19		23 4 9	25 4 8	56	57		12 19 8	14 6 11
19	20		23 0 4	25 0 8	57	58		12 12 5	13 19 0
20	21		22 15 10	24 16 6	58	59		12 4 11	13 11 1
					59	60		11 17 4	13 3 1
21	22		22 11 4	24 12 4	60	61		11 9 8	12 15 1
22	23		22 6 9	24 8 1					
23	24		22 2 3	24 3 10	61	62		11 2 2	12 7 0
24	25		21 17 7	23 19 5	62	63		10 14 11	11 19 0
25	26		21 12 11	23 15 0	63	64		10 7 8	11 11 0
					64	65		10 0 6	11 2 11
26	27		21 8 3	23 10 6	65	66		9 13 4	10 14 7
27	28		21 3 6	23 5 11					
28	29		20 18 9	23 1 3	66	67		9 6 4	10 6 4
29	30		20 13 11	22 16 6	67	68		8 19 7	9 18 1
30	31		20 9 1	22 11 8	68	69		8 12 10	9 9 10
					69	70		8 6 2	9 1 10
31	32		20 4 2	22 6 9	70	71		7 19 5	8 14 2
32	33		19 19 2	22 1 9					
33	34		19 14 2	21 16 7	71	72		7 12 10	8 6 10
34	35		19 9 2	21 11 5	72	73		7 6 4	7 19 10
35	36		19 4 1	21 6 2	73	74		7 0 1	7 13 0
					74	75		6 14 1	7 6 4
36	37		18 18 11	21 0 9	75	76		6 8 4	6 19 10
37	38		18 13 9	20 15 3					
38	39		18 8 6	20 9 7	76	77		6 2 8	6 13 7
39	40		18 3 2	20 3 11	77	78		5 17 4	6 7 5
40	41		17 17 10	19 18 0	78	79		5 12 3	6 1 6
					79	80		5 7 2	5 15 9
41	42		17 12 4	19 12 1	80 or any greater age.			5 2 4	5 10 3
42	43		17 6 10	19 5 11					
43	44		17 1 4	18 19 8					

## OLD AGE PENSIONS.—DEFERRED LIFE ANNUITIES.

The Annuity Tables below give the cost of an Annuity of £1, and an Annuity of a larger amount costs a larger sum in exact proportion. For instance, a Pension of £10 a year would cost ten times the amount given below. In this class of Annuities the Purchase Money will be returned on application, or on the Death of the Nominee, if an instalment of the Annuity shall not have become due. These Pensions can be Deferred any number of years from 10 to 50, and any cost not given below will be furnished on application to the Controller, Post Office Savings Bank, London.

*Purchase Money Returnable Scale.*

Age at time of Purchase.	Cost of an Annuity of £1 payable after the expiration of 10 YEARS.				Cost of an Annuity of £1 payable after the expiration of 20 YEARS.			
	Males.		Females.		Males.		Females.	
	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 11 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.	In 21 Yearly Sums of	In one Sum at time of Purchase.
21 and under 22	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
22	1 12 5	15 15 9	1 15 10	17 9 0	0 13 0	10 15 1	0 14 6	11 19 3
23	1 12 0	15 11 10	1 15 5	17 5 1	0 12 10	10 11 8	0 14 3	11 15 6
24	1 11 7	15 7 11	1 15 0	17 1 1	0 12 7	10 8 4	0 14 0	11 11 9
25	1 11 3	15 4 0	1 14 7	16 17 0	0 12 5	10 4 10	0 13 9	11 7 10
26	1 10 10	15 0 0	1 14 2	16 12 11	0 12 2	10 1 4	0 13 6	11 3 10
27	1 10 5	14 16 0	1 13 9	16 8 8	0 12 0	9 17 10	0 13 3	10 19 9
28	1 10 0	14 11 11	1 13 4	16 4 4	0 11 9	9 14 3	0 13 0	10 15 6
29	1 9 7	14 7 10	1 12 10	16 0 0	0 11 6	9 10 7	0 12 9	10 11 3
30	1 9 2	14 3 9	1 12 5	15 15 6	0 11 4	9 6 10	0 12 6	10 6 10
31	1 8 8	13 19 6	1 11 11	15 10 11	0 11 1	9 3 1	0 12 3	10 2 6
32	1 8 3	13 15 3	1 11 5	15 6 3	0 10 10	8 19 2	0 12 0	9 18 1
33	1 7 10	13 11 0	1 10 11	15 1 6	0 10 7	8 15 2	0 11 9	9 13 8
34	1 7 5	13 6 8	1 10 5	14 16 7	0 10 4	8 11 2	0 11 5	9 9 2
35	1 6 11	13 2 3	1 9 11	14 11 7	0 10 1	8 7 0	0 11 2	9 4 6
36	1 6 6	12 17 9	1 9 5	14 6 6	0 9 10	8 2 10	0 10 11	8 19 11
37	1 6 0	12 13 3	1 8 11	14 1 3	0 9 7	7 18 6	0 10 7	8 15 2
38	1 5 6	12 8 7	1 8 4	13 15 10	0 9 4	7 14 1	0 10 4	8 10 4
39	1 5 1	12 3 11	1 7 9	13 10 4	0 9 1	7 9 6	0 10 0	8 5 5
40	1 4 7	11 19 2	1 7 2	13 4 10	0 8 9	7 4 10	0 9 9	8 0 7
41	1 4 1	11 14 4	1 6 7	12 19 2	0 8 6	7 0 2	0 9 5	7 15 8
42	1 3 7	11 9 4	1 6 0	12 13 7	0 8 3	6 15 7	0 9 2	7 10 9
43	1 3 0	11 4 3	1 5 6	12 7 11	0 7 11	6 11 2	0 8 10	7 5 10
44	1 2 6	10 19 1	1 4 10	12 2 1	0 7 8	6 6 9	0 8 6	7 1 0
45	1 2 0	10 13 9	1 4 3	11 16 3	0 7 5	6 2 4	0 8 3	6 16 0
46	1 1 5	10 8 4	1 3 8	11 10 3	0 7 2	5 18 0	0 7 11	6 11 0

*Purchase Money Not Returnable Scale.*

21 and under 22	1 10 3	14 2 4	1 14 0	16 1 5	0 11 0	8 5 11	0 12 11	9 19 2
22	1 9 10	13 18 1	1 13 7	15 17 3	0 10 10	8 2 2	0 12 8	9 15 4
23	1 9 5	13 13 8	1 13 2	15 13 1	0 10 7	7 18 5	0 12 5	9 11 5
24	1 8 11	13 9 4	1 12 9	15 8 10	0 10 4	7 14 7	0 12 2	9 7 6
25	1 8 6	13 4 10	1 12 4	15 4 6	0 10 2	7 10 9	0 11 11	9 3 6
26	1 8 1	13 0 5	1 11 10	15 0 1	0 9 11	7 6 11	0 11 8	8 19 5
27	1 7 8	12 15 11	1 11 5	14 15 7	0 9 8	7 3 1	0 11 5	8 15 3
28	1 7 2	12 11 5	1 10 11	14 11 1	0 9 5	6 19 2	0 11 2	8 11 0
29	1 6 9	12 6 10	1 10 6	14 6 5	0 9 3	6 15 4	0 10 11	8 6 9
30	1 6 3	12 2 3	1 10 0	14 1 9	0 9 0	6 11 4	0 10 8	8 2 5
31	1 5 10	11 17 8	1 9 6	13 16 11	0 8 9	6 7 5	0 10 5	7 17 11
32	1 5 4	11 13 0	1 9 0	13 12 1	0 8 6	6 3 6	0 10 1	7 13 5
33	1 4 11	11 8 3	1 8 6	13 7 2	0 8 3	5 19 6	0 9 10	7 8 10
34	1 4 5	11 3 6	1 8 0	13 2 1	0 8 0	5 15 6	0 9 6	7 4 2
35	1 3 11	10 18 9	1 7 6	12 16 11	0 7 9	5 11 5	0 9 3	6 19 5
36	1 3 5	10 13 11	1 6 11	12 11 8	0 7 6	5 7 5	0 8 11	6 14 8
37	1 3 0	10 9 1	1 6 5	12 6 4	0 7 3	5 3 4	0 8 8	6 9 10
38	1 2 6	10 4 2	1 5 10	12 0 10	0 7 0	4 19 2	0 8 4	6 4 11
39	1 2 0	9 19 2	1 5 3	11 15 3	0 6 9	4 15 1	0 8 0	6 0 0
40	1 1 6	9 14 2	1 4 8	11 9 7	0 6 6	4 10 10	0 7 9	5 14 11
41	1 0 11	9 9 1	1 4 1	11 3 9	0 6 2	4 6 8	0 7 5	5 9 10
42	1 0 5	9 4 0	1 3 5	10 17 9	0 5 11	4 2 5	0 7 1	5 4 9
43	0 19 11	8 18 10	1 2 10	10 11 9	0 5 8	3 18 1	0 6 9	4 19 7
44	0 19 4	8 13 7	1 2 2	10 5 6	0 5 4	3 13 9	0 6 5	4 14 4
45	0 18 10	8 8 3	1 1 6	9 19 3	0 5 1	3 9 5	0 6 1	4 9 1

# LIST OF LEAFLETS ISSUED BY THE BOARD OF AGRICULTURE.

Number.	Title.
Leaflet No. 1	Mites on Currant and Nut Trees.
" " 2	Vine and Raspberry Weevils.
" " 3	The Turnip Fly or Flea.
" " 4	Caterpillars on Fruit Trees.
" " 5	The Mangel Wurzel Fly.
" " 6	The Field Vole.
" " 7	Autumn Catch Crops and Fodder Supply.
" " 8	Farmers and Assessments to Local Rates.
" " 9	Ensilage.
" " 10	Wireworms.
" " 11	The Daddy Longlegs or Crane Fly.
" " 12	The Gooseberry Saw-Fly.
" " 13	Acorn Poisoning.
" " 14	The Raspberry Moth.
" " 15	The Apple Blossom Weevil.
" " 16	The Apple Sucker.
" " 17	Preservation of Commons.
" " 18	Fertilisers and Feeding Stuffs Act, 1893.
" " 19	Pea and Bean Weevil.
" " 20	The Magpie Moth.
" " 21	The Warble Fly.
" " 22	The Diamond Back Moth.
" " 23	Potato Disease.
" " 24	The Ribbon Footed Corn-Fly.
" " 25	The Cockchafer.
" " 26	Farmers and the Income Tax.
" " 27	Remission of Tithe Rentcharge.
" " 28	Anthrax.
" " 29	Swine Fever.
" " 30	The Codlin Moth.
" " 31	The Onion Fly.
" " 32	Foul Brood or Bee Pest.
" " 33	Surface Caterpillars.
" " 34	Woolly Aphis or American Blight.



*Recd*  
15 MAR. 97



*Copies of the above leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.*



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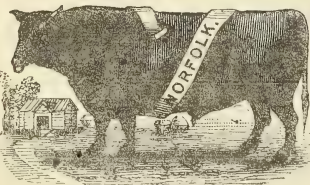
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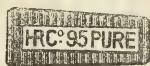
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AGENTS TO THE LONDON AND NORTH-WESTERN RAILWAY.



# CONTENTS.

	Page
CO-OPERATIVE AGRICULTURAL SOCIETIES IN GERMANY - - -	1
DAIRY TRADE OF SWEDEN AND NORWAY - - -	7
CATTLE RAISING IN RUSSIA - - -	10
BEET-SUGAR INDUSTRY ON THE CONTINENT - - -	14
INDIAN TRADE IN AGRICULTURAL PRODUCE - - -	19
REPORTS ON FOREIGN CROPS - - -	25
Austria. Argentina. Denmark. France. Germany. Hungary. India. Italy. Roumania. Russia. Spain. United States. Victoria.	
INJURIOUS INSECTS AND FUNGI - - -	33
Bean Beetle. Common Swift Moth. Cockchafer. Potato Scab.	
GENERAL AGRICULTURAL NOTES - - -	44
Tar-Branding of Sheep. French Imports of Cattle and the Tuberculin Test. Agricultural Banks in Belgium. Fruit Growing in Victoria. Wheat Growing in Queensland. Dairy and Bacon Factories in Victoria. Import- tation of Cereals for Starch Making into France. Proposed Grain Depôts in Germany. Agriculture in Russian Turkestan. Cultivation and Evapo- ration of Raspberries in the United States. The Mushroom Industry of Paris. Dairying in Derbyshire. Inspection of Animals and Meat in Queensland. Agricultural Labour in April. Sale of Honey in Belgium. Austrian Regulations relating to the Importation of Animals.	
FOREIGN OFFICE REPORTS - - -	64
Agriculture in Western France. Agricultural Distress in Normandy. Agri- culture in Poland. Margarine Trade of Holland. Spanish Wheat Duties. Agriculture in Algeria. Potato Experiments in France. Agriculture in Palestine. Switzerland and Protection. Agriculture in Switzerland.	
PARLIAMENTARY PUBLICATIONS - - -	77
IMPORTS OF AGRICULTURAL PRODUCE - - -	89
PRICES OF LIVE STOCK - - -	91
PRICES OF MEAT, CORN, AND DAIRY PRODUCE - - -	96
PRICES OF VEGETABLES AND FRUIT - - -	105
PRICES OF WOOL - - -	108
DISEASES OF ANIMALS - - -	108
POST OFFICE SAVINGS BANKS - - -	110
LIST OF LEAFLETS - - -	114

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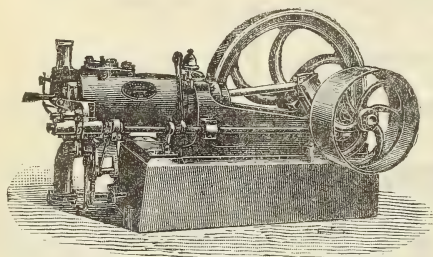
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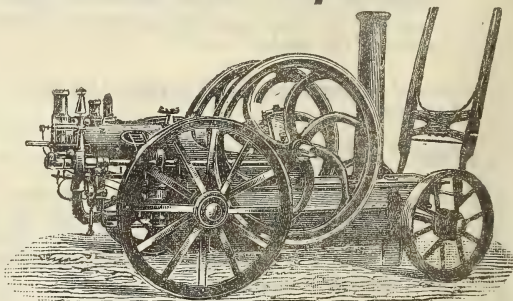
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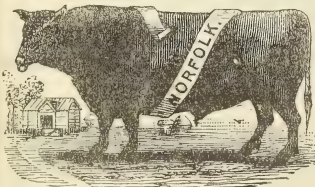
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# CONTENTS.

	Page
BARLEY SUPPLY OF THE UNITED KINGDOM - - -	115
ROTTENNESS OF TURNIPS AND SWEDES IN STORE - - -	120
FOUL BROOD OR BEE PEST - - -	132
AGRICULTURAL RETURNS OF GREAT BRITAIN, 1896 - - -	135
CULTIVATION OF CEREALS IN ARGENTINA - - -	142
REPORTS ON FOREIGN CROPS - - -	145
United States. India. Russia. Austria. Denmark. France. Germany. Hungary. Italy. Manitoba. Roumania.	
INJURIOUS INSECTS AND FUNGI - - -	153
Cherry Moth. Tomato Disease. Onion Fly. Carpocapsa Pomonella in Walnuts. Hop Bug. Surface Caterpillars.	
GENERAL AGRICULTURAL NOTES - - -	167
Dairying in New South Wales. Dairying in Canada. Wheat Growing in New South Wales. Live Stock Trade of Uruguay. Importation of Horses into Holland. Live Stock Census in Switzerland. Plum Culture in Bosnia. Proposed Australian Export Regulations. Value of Farm Property in Ontario. Exports of Perishable Produce from Victoria. Potato Cultiva- tion. Irrigation in India. Ministry of Agriculture in Denmark. Imports of Living Plants, Fruits and Vegetables into Russia. Agricultural Imple- ments in Gambia. Live Weight Statistics in France. Tobacco Growing in Germany. Agricultural Colonies in Spain. French National Dairy School at Mamirolle. Agricultural Returns of New Zealand. Farm Indebtedness in Bavaria.	
HOP ACREAGE, 1896 - - -	187
FOREIGN OFFICE REPORTS - - -	188
Danish Trade in Agricultural Produce. Spanish Customs Surtaxes on Foreign Wheat. Cattle Raising in Venezuela. Dairying in the State of Washington. Export of American Produce by the Gulf of Mexico. Cultivation of Saffron in Spain. Cider Industry in Germany.	
PARLIAMENTARY PUBLICATIONS - - -	195
IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE - - -	209
PRICES OF LIVE STOCK - - -	222
PRICES OF MEAT, CORN, AND DAIRY PRODUCE - - -	227
PRICES OF VEGETABLES AND FRUIT - - -	236
PRICES OF WOOL - - -	239
DISEASES OF ANIMALS - - -	239
POST OFFICE SAVINGS BANKS - - -	241
LIST OF LEAFLETS - - -	244

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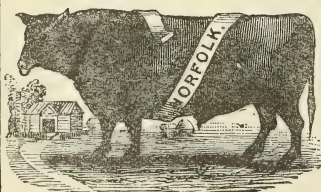
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# CONTENTS.

	Page
WOOL SUPPLY OF THE UNITED KINGDOM - - -	245
AGRICULTURAL DEPRESSION IN GERMANY - - -	251
CATTLE-RAISING INDUSTRY IN THE UNITED STATES - - -	257
FARMERS AND THE INCOME TAX - - - - -	263
REPORTS ON FOREIGN CROPS - - - - -	266
United States. France. Italy. Roumania. Manitoba. Ontario. Austria. Hungary. Belgium. Germany. Russia.	
INJURIOUS INSECTS AND FUNGI - - - - -	273
Insects in the Spring and Summer of 1896. Army Worm. Woolly Aphis, or American Blight. Corn Moth. A Lily Disease. A Disease of Snowdrops. Narcissus Fly. Smut of Brome Grass. Hop Mildew.	
GENERAL AGRICULTURAL NOTES - - - - -	294
Mutton and Wool Trade of New Zealand. Shipment of Frozen Produce from South Australia. Australian Conference on Tick Fever. Cultivation of Lucerne in England. Cultivation of Mustard in England. Cultivation of Oats in Canada. Cold Storage for Canadian Fruit. Adulteration of Milk and Butter. Excise Duty on Beer: Barley Substitutes. Agricultural Budget of Holland. New School of Agriculture in Egypt. Finnish Butter Trade. Dairy Produce in Queensland. Wheat Cultivation in German East Africa. Sale of Sugar in Belgium. Carriage of Manures in Prussia.	
FOREIGN AND COLONIAL OFFICE REPORTS - - - - -	311
Sheep in the Falkland Islands. Agriculture in Roumania. Russian Depart- ment of Agriculture. Introduction of Plants into Italy. Cost of Farming in Oregon. Sale of Fertilisers and Seeds in Germany. Agriculture in Norway. Advances on Grain in Russia. Emigration to California. Agricultural Depression in Spain. Antwerp Linseed Trade.	
PARLIAMENTARY PUBLICATIONS - - - - -	321
IMPORTS OF AGRICULTURAL PRODUCE - - - - -	328
PRICES OF LIVE STOCK - - - - -	330
PRICES OF MEAT, CORN, AND DAIRY PRODUCE - - - - -	335
PRICES OF VEGETABLES AND FRUIT - - - - -	344
PRICES OF WOOL - - - - -	347
DISEASES OF ANIMALS - - - - -	347
POST OFFICE SAVINGS BANKS - - - - -	349
LIST OF LEAFLETS - - - - -	354

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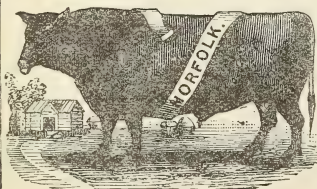
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# CONTENTS.

	Page
GRAIN AND POTATO CROPS OF 1896	355
HAY CROP OF 1896	359
HOP CROP OF 1896	362
FRUIT CROP OF 1896	365
IMPORT TRADE IN EGGS	369
FERTILISERS AND FEEDING STUFFS ACT	376
FARMERS AND ASSESSMENTS TO LOCAL RATES	379
REPORTS ON FOREIGN CROPS	384
United States. India. France. Austria. Sweden. Manitoba. Victoria.	
INJURIOUS INSECTS AND FUNGI	390
Carrot Fly.	
GENERAL AGRICULTURAL NOTES	393
Agricultural Hirings in Scotland in 1896. Malting and Seed Barley Competition of 1896. Live Stock in Argentina. Imports of Fresh Milk and Cream. Cultivation of Cereals in Uruguay. Forestry in Sweden. Forestry in Norway. Dairying in Nebraska and the Dakotas. American "Ladled" Butter. Farm Mortgages in the United States. Effect of the American Homestead Act. Farm Animals in the United States. French Census of 1896. Kiln-drying of Corn in Finland. Co-operation in Marketing Fruit in New Zealand.	
FOREIGN OFFICE REPORTS	409
Wheat Production and Trade in Spain. Agriculture in France. Cultivation of Wheat in South Russia. State Loans for Agricultural Improvements in Russia. Cultivation of Wheat and Maize in Argentina. Agricultural Department of Uruguay. Machinery Exhibition at Kieff.	
PARLIAMENTARY PUBLICATIONS	419
IMPORTS AND EXPORTS OF AGRICULTURAL PRODUCE	428
PRICES OF LIVE STOCK	440
PRICES OF MEAT, CORN, AND DAIRY PRODUCE	447
PRICES OF VEGETABLES AND FRUIT	456
PRICES OF WOOL	459
DISEASES OF ANIMALS	459
POST OFFICE SAVINGS BANKS	461
LIST OF LEAFLETS	464

(This number contains the Index to Vol. III.)

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